A Harvest Business Publication April 1980/$1.25

WEEDS TREES & TURF

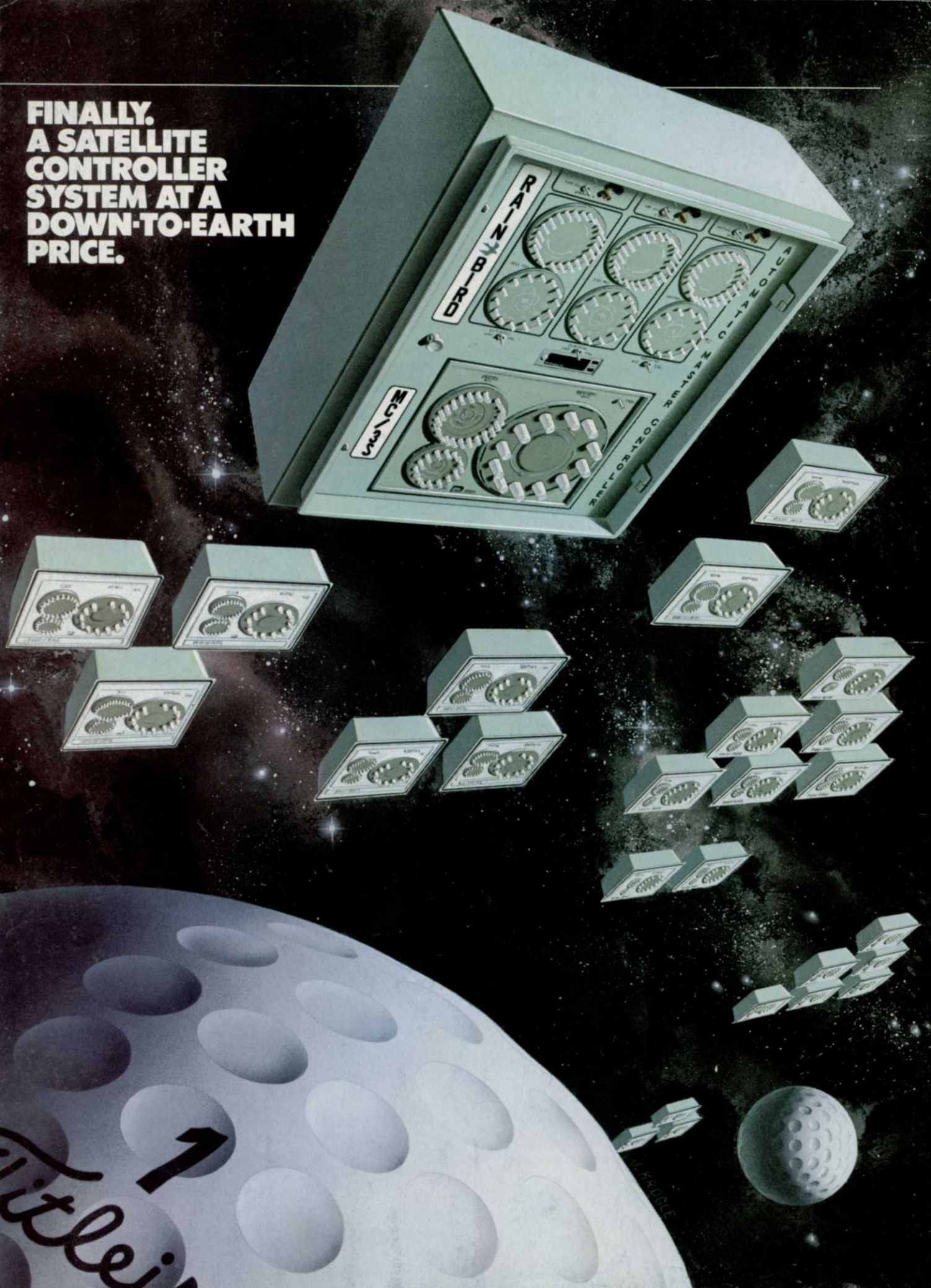
S.U.N.Y.'s Two-Year Arboriculture Program

Irrigation System Troubleshooting for Landscape Contractors

Defending College Grounds Budgets

Flowers highlighting Boston's Christian Science Center.

ISSN 0043-1753


FINALLY.
A SATELLITE
CONTROLLER
SYSTEM AT A
DOWN-TO-EARTH
PRICE.
RAIN BIRD
AUTOMATIC MASTER CONTROLLER
MC/3S
1

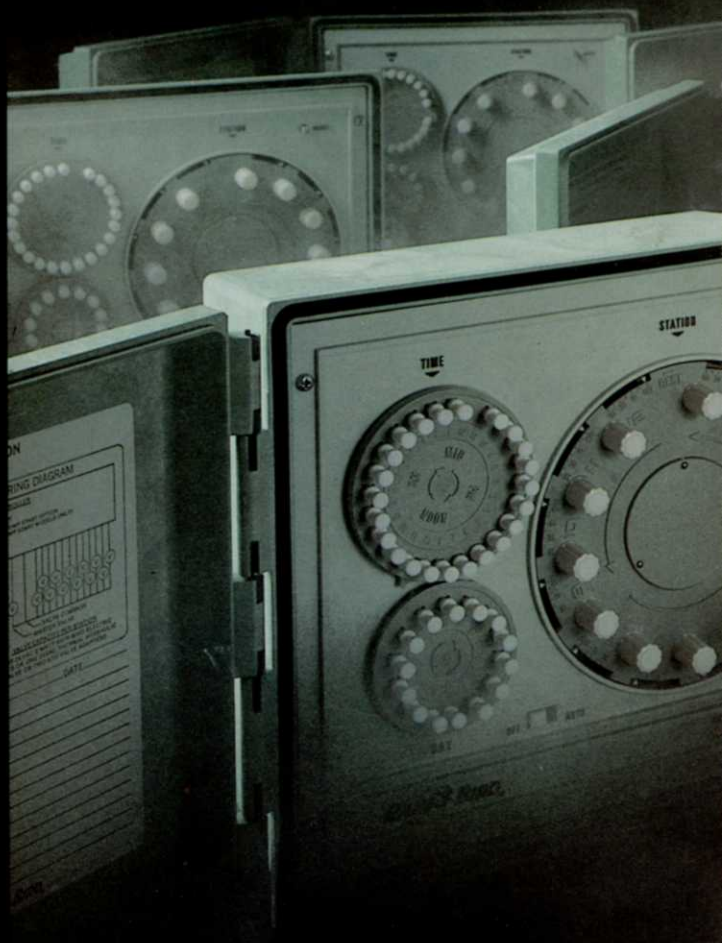
INTRODUCING THE MISER™ SATELLITE CONTROLLER SYSTEM.

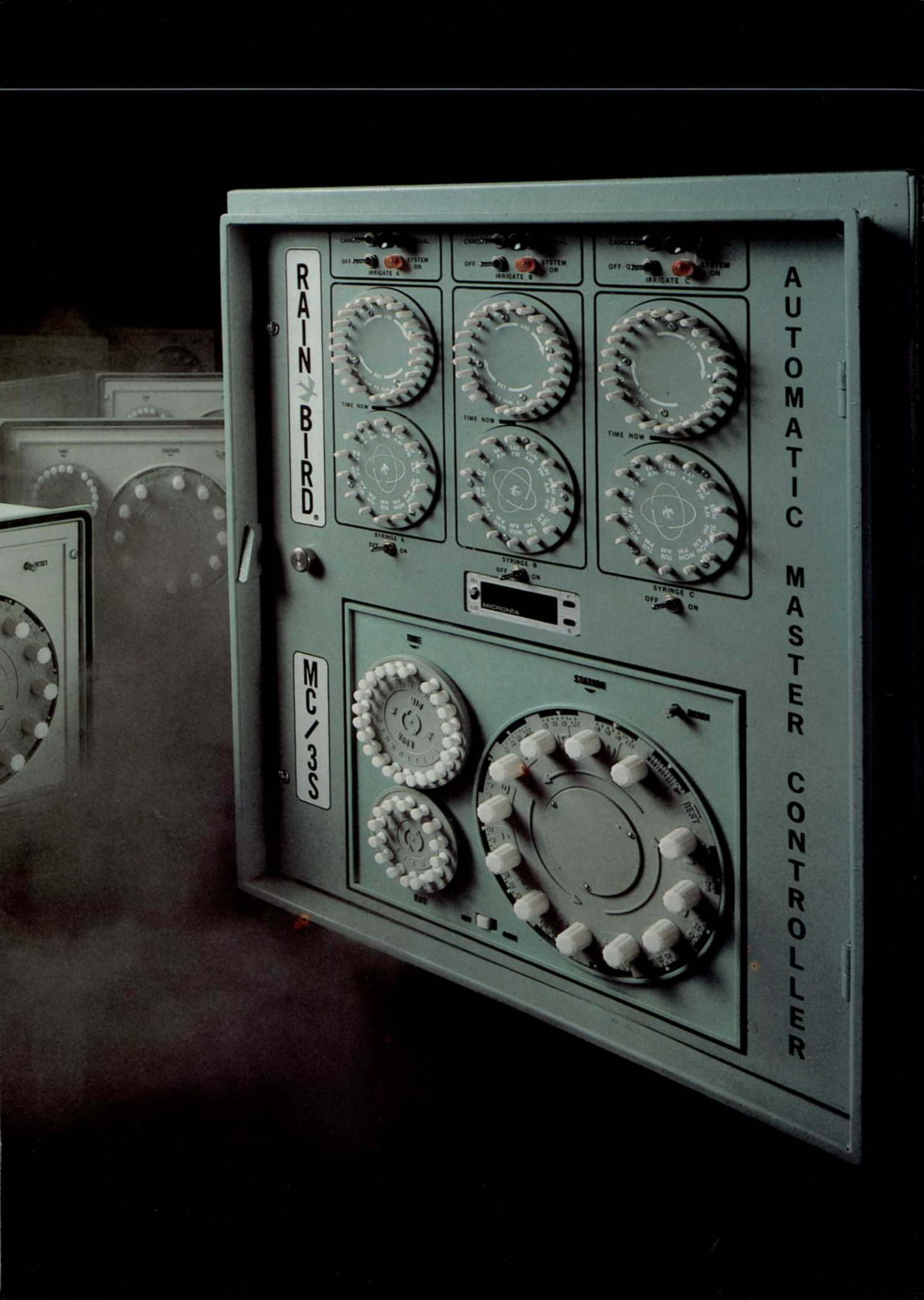
Simple, dependable, foolproof. Based on two of the industry's most reliable controllers ever—the Rain Bird RC-1230 and RC-1260—our new Miser system combines flexibility and economy like never before. The best of both worlds.

It starts with three Turf Irrigation Start Clocks, with seven-day calendars and ½ hour starts. Add an RC-1260 type controller module that provides syringe times of 0 to 10 minutes. Next, up to 75—that's right, 75—satellites, each one capable of handling up to 12 separate stations from greens to fairways to roughs.

The Miser system doesn't stop there, though. You'll also find plenty of Rain Bird extras to help make your job just a little bit easier. Extras like a digital clock that shows time of day. A flashing, loss-of-power display. Satellite pump starts. Manual override switches for each of three satellite groups. Pedestal mount flexibility.

It's a satellite controller system that gets the job done fast, effectively. And more good news—it doesn't take an astronaut to operate it.




RAIN BIRD
MC\3S
AUTOMATIC MASTER CONTROLLER
IRRIGATE A
IRRIGATE B
IRRIGATE C
SYSTEM ON
TIME NOW
STRINGE A
STRINGE B
STRINGE C
OFF ON
MICRONA

FEATURES

Miser MC-3S Master Controller

- Three Turf Irrigation Start Clocks with 7-day calendars and ½-hour starts.
- RC-1260 type controller module with 0 to 10-minute syringe timing.
- Individual cancel and manual irrigate switches for each group of satellites.
- Flashing, loss-of-power display.
- Digital time-of-day clock.

Miser SC-1230/1260 Satellite Controller

- "OFF-AUTO" slide switch lets satellite operate independently of Master Controller.
- 14-day, one hour start interval clock.
- 0 to 60-minute timing on SC-1260 and 3 to 30-minute timing on SC-1230.
- Pump start standard.

TECHNICAL DATA

- **Station Capacity per Satellite Unit**
  4 solenoid valves/station (max.)
  1 T-H valve/station (max.)
  4 VIH-E valve-in-head sprinklers/station (max.)
- **Satellite Capacity of Master Unit**
  25 satellites (max.) on each of 3 irrigation clocks
  75 satellites (max.) on system
- **Electrical Characteristics**
  MC-3S Master Unit
  Input: 120 volt A.C. power—60 HZ
  Output: 120 volt A.C.—60 HZ
  Circuit breaker: 2.1 AMP (holding); 3.0 AMP (break)
  Max. current draw: 1.9 AMP
  SC-1230 or 1260 Satellite Unit
  Input: 120 volt A.C. power—60 HZ
  Output: 26.5 volt A.C.—60 HZ, 1.5 AMP
  Circuit breaker: 2.1 AMP (holding); 3.0 AMP (break)
  Master valve circuit: 26.5 VAC, 60 HZ
  Max. current draw: (120 volt A.C.)
  1 solenoid/station: 0.34 AMP
  2 solenoid/station: 0.41 AMP
  3 solenoid/station: 0.48 AMP
  4 solenoid/station: 0.55 AMP
  1 TH valve/station: 0.49 AMP
  Signal wires
  Syringe —max. current draw: 0.46 AMP
  Start —max. current draw: 0.21 AMP
  Common —max. current draw: 0.88 AMP
- **Dimensions:**
  MC-3S Master Unit—16¼" wide x 18½" high x 7⅝" deep
  SC-1230/1260 Satellite Unit—11½" wide x 9¾" high x 6¾" deep
- **Weights:**
  MC-3S Master Unit—45 lbs.
  SC-1230/1260 Satellite Unit—12 lbs.
- **Accessories:**
  SC-1230/1260 Satellite Unit:
  PD-7K pedestal mounting kit
  PED (RC-7A) pedestal and adapter mounting kit

Write **168** on free information card

RAIN BIRD®
BRINGING NEW IDEAS TO LIFE.
7045 N. Grand Avenue, Glendora, CA 91740
® Rain Bird is a registered trademark of Rain Bird Sprinkler Mfg. Corp., Glendora, California. © 1980 Rain Bird Sprinkler Mfg. Corp.
D38723

Pair for the Course

Penncross Penneagle

Penncross greens are known around the world for their consistent, high quality putting surface. **Penncross** has genetic diversity assuring disease resistance . . . germinates fast, establishes quicker . . . superbly consistent, less grain for true putts . . . greens up earlier, holds summer color better . . . great for overseeding winter greens in south.

PENNCROSS BENTGRASS

Penneagle was developed through 18 years of research and 5 years of testing. This new variety of creeping bentgrass has these selected attributes of a great all-purpose grass for the entire course. **Penneagle** has a broad genetic base for greater climatic adaptability . . . is not overly aggressive, but competitive with Poa annua . . . has tight, more upright growth characteristics . . . is finer leafed than most bents . . . has excellent putting and playing qualities . . . was bred for disease resistance.

PENNEAGLE

TEE2GREEN CORP.
12306 West 102nd Street Lenexa, Kansas 66215
913-492-1587 Call collect for your nearest dealer

For more information about Penncross or Penneagle write:

Penncross Bentgrass Growers Assn.
1349 Capitol N.E., Salem, Oregon 97303

Write **116** on free information card

WT&T

CONTENTS

APRIL 1980/VOL. 19, NO. 4

Bruce F. Shank
Editor

John Kerr
Assistant Editor

Ron Morris
Golf Editor

Robert Earley
Lawn Care Editor

Scott Scredon
Nursery Editor

Business

Richard J.W. Foster
Publishing Director

Richard Gore
National Sales Manager

Clarence Arnold
Research Manager

Chris Simko
Advertising Production

Corporate Officers

James Milholland Jr.
President/Chairman

Bernard P. Krzys
Sr. Vice President

Dayton Matlick
Sr. Vice President

Charles Quindlen
Sr. Vice President

Richard J.W. Foster
Vice President

HARVEST

Copyright© 1980 by the Harvest Publishing Co., a subsidiary of Harcourt Brace Jovanovich, Inc. All rights reserved. No part of this publication may be transmitted or reproduced in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the publisher. Address: 9800 Detroit Ave., Cleveland, Ohio 44102.

Single copy price $1.25 for current and back issues. Foreign $1.50. Subscription in the U.S. and Canada are $12.00 per year. $15.00 in other countries. Foreign air mail optional at an additional $24 per year. Controlled circulation postage paid at Cleveland, Ohio 44101. Postmaster: send form 3569.

BPA ABP

Member; American Business Press, Business Publications Audit, National Golf Foundation, American Sod Producers Association, Associated Landscape Contractors of America, National Landscape Association, Horticultural Research Institute, and Professional Grounds Management Society.

Letters/Outlook 6

Landscape Contractor News 14

Government Update 16

GREEN INDUSTRY NEWS

Winter Meeting Reports: National Arborist Association, American Sod Producers Association, and the Golf Course Superintendents of America . . . Dow Executive Urges Reinstatement of 2,4,5-T/Silvex . . . Fertilizer Production in U.S. Rises 14 Percent . . . Weed Science Society National and Regional Meetings 13

FEATURES

The Case for Strong College Campus Maintenance
The campus grounds are a chief marketing factor for a college which must compete for students, alumni contributions, and the best professors. 20

Arboriculture Program to Graduate First Students
The State University of New York, Farmingdale, will graduate its first students in June. The program was constructed with the recommendations of industry associations. 30

Dogwood, Redbud, and Other Aristocratic Natives
Horticulturist Doug Chapman describes relative benefits of these native flowering tree species. 34

Landscape Contractors Watch Inventories Closely
Latest information from the fourth quarter of 1979 shows contractors reacting to inflation and recession. Buying shows no great falloff.

KEYS TO PROFESSIONAL ANNUAL DISPLAYS
Three experts discuss design and maintenance of annual displays, plants for exposed locations, and herbicides for weed control in annual beds. 43

Troubleshooting Irrigation Systems for Landscape Contractors
Representatives from Toro, Rain Bird, and Buckner spoke during ALCA's annual meeting in San Diego. This is a report on their talks. 59

The Land Reclamation Report 77

Vegetation Management 80

Sod Producer News 84

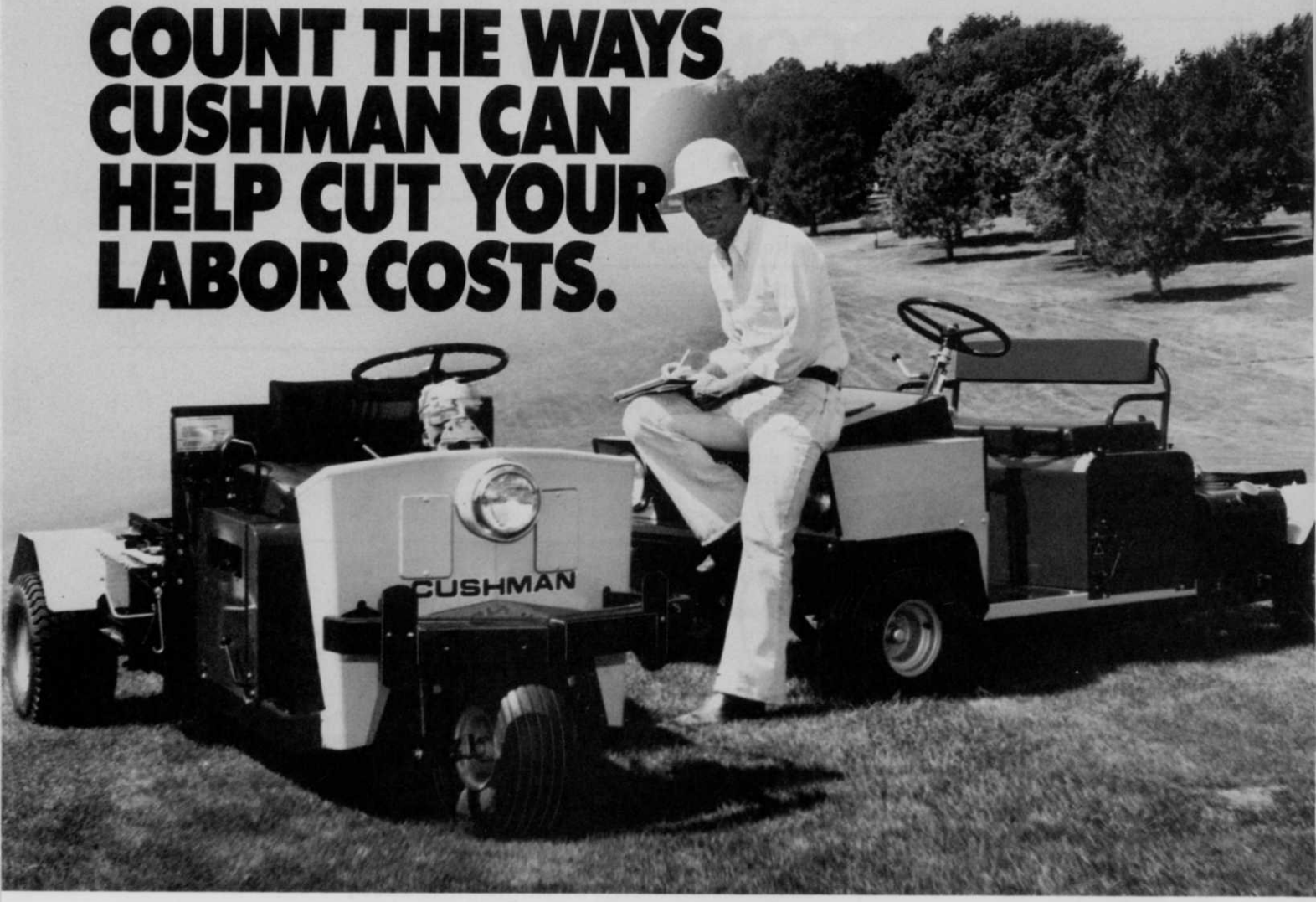
Products 85

Classifieds 92

Events 95

Advertiser Information 96

COUNT THE WAYS CUSHMAN CAN HELP CUT YOUR LABOR COSTS.



With inflation driving up your labor costs, you've got to find new ways to get more work done in less time.

That's what the Cushman Turf-Care System is all about.

At the heart of our system is the Cushman 3- or 4-wheel Turf-Truckster vehicle. With a rugged 18-hp engine, and a transmission designed to allow the optional PTO to attach directly to it, the Turf-Truckster moves people, tools and equipment quickly and economically.

But the real beauty of the Turf-Truckster is that it also helps your crew finish most turf jobs fast, thanks to a full line of optional Cushman attachments.

Each attachment secures to your Turf-Truckster's chassis in minutes, through Cushman's pin-disconnect system. You don't bolt or hitch, but just put the attachment in place, snap-in two or three pull pins and you're ready to hit the turf.

And every optional Cushman Turf-Care attachment is engineered to get its job done neatly and in as little time as possible.

1. GREENSAVER® AERATOR.

The Greensaver lets you aerate greens, tees or other turf areas up to 10 times faster than walk-type units.

It attaches easily to either the 3- or 4-wheel Turf-Truckster. Choose the drum best suited for your turf: ½" coring tines, ⅜" coring tines or slicing tines—they are all interchangeable. What's more, both coring drums collect cores as you aerate. Or remove the side plates and return the cores to the turf to be broken up as top dressing.

2. SHORT BOX & FLATBED/BOX.

Your Turf-Truckster becomes a flatbed hauler with just two pull pins in place. Bolt on the optional side panels and tailgate to the flatbed, and you've got a 1,000-lb. capacity* box that can be dumped manually or hydraulically.

Write **121** on free information card

3. SPRAYER.

It's a 100-gallon polyethylene tank that holds liquids for spraying greens, trees, bushes or roughs quickly and accurately. Team it with the Turf-Truckster equipped with a standard 2 to 1 auxiliary transmission, optional PTO and ground speed governor for properly controlled spraying.

4. TOP DRESSER.

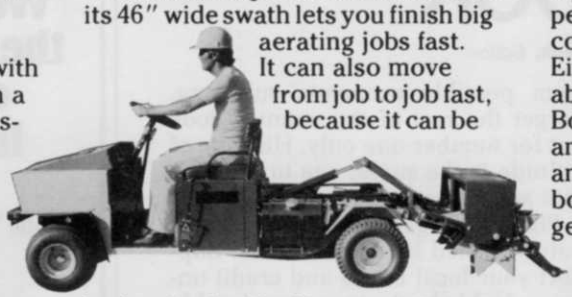
Compared to self-powered or walk-type top dressers, this unit pays for itself in the hours it can save your crew. A rubber fabric moving bed and rotating brush are regulated by the vehicle's ground speed to maintain an even spreading pattern over a 31½" swath. And the hopper holds up to 1,000 lbs. of material from rock salt to powdered fertilizer.

5. SPREADER/SEEDER.

Mounted on the optional Short Box or Flatbed/Box, its cyclone action spreads up to 300 pounds of seed, sand, salt or fertilizer over areas up to 40′ wide. The Spreader/Seeder is powered by the Turf-Truckster's optional PTO with extension shaft. And since all controls are operated from the driver's seat, one man can get the job done.

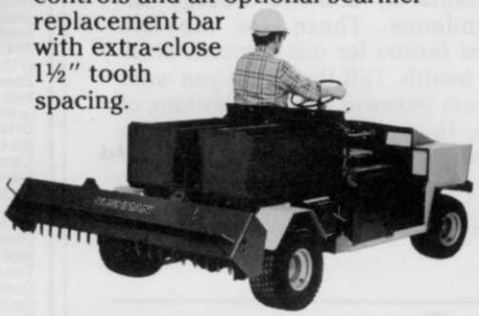
6. QUICK AERATOR.

We call it the Quick Aerator because its 46" wide swath lets you finish big aerating jobs fast. It can also move from job to job fast, because it can be hydraulically lifted by controls from the driver's seat for ground transport (optional hydraulic system and dump set required). Three tine styles are available for different soil conditions: slicing, coring (2 sizes) and open spoon.



7. GRADER/SCARIFIER.

Now you can groom non-turf areas with your Cushman Turf-Care System. Attach the new Grader/Scarifier to your Turf-Truckster and you're ready to break up compacted dirt on ball diamond infields or golf car pathways. As a professional grading tool, it will keep your grounds even, or create new surfaces. There's a built-on dragmat holder, driver-operated controls and an optional scarifier replacement bar with extra-close 1½" tooth spacing.



8. POWER CONVERTER.

The Cushman Power Converter turns your Turf-Truckster into a mobile power plant for electric tools, floodlights . . . anything with a universal motor that draws up to 120 volts DC. So, instead of bringing every repair job back to the shop, your crew can handle them in the field. The Power Converter is inexpensive, easy to install and makes your Cushman System even more versatile.

9. CUSHMAN RUNABOUT.

If you need a vehicle for moving people and equipment efficiently, consider the Cushman Runabout. Either the two-man 18-hp Runabout, or the one-man 12-hp model. Both give you maneuverability and feature a big pick-up box, and 3-speed transmission. And both Runabout models let your crew get to the job without tying up a golf car that could be on the course earning a profit.

The Cushman Runabout. The Cushman Turf-Truckster. The Cushman Turf-Care System. They're all designed with the kind of quality you've come to expect from Cushman. And common sense engineering for less downtime, helping you hold down rising operating costs.

If you'd like to see our turf system in action on your grounds, return this coupon. Your Cushman Turf Dealer is ready to demonstrate our labor-saving System to you now.

*Rating for vehicle equipped with 9.50-8 rear tires.

© Outboard Marine Corporation 1979.
All rights reserved.

CUSHMAN®

The Labor-Saving Turf System

2027 Cushman, P.O. Box 82409,
Lincoln, NE 68501

Let's see the labor-saving System at work, Cushman.

☐ I'd like more information on the _____

☐ Send me your new catalog for 1980.

Name _____

Title _____

Address _____

City _____

State _____ ZIP _____

80-CUT-1

WT&T

OUTLOOK

By Bruce F. Shank, Editor

Sometimes there is no logical explanation for victory when the odds are so immensely stacked against it. All the experts look at individual facts and make a prediction of failure. Such is fairly much the case with our economy.

But, suddenly, by some unrelated event, we see that individual facts are not enough and that experts can be wrong. They forget that in some instances human spirit, determination, teamwork, and a belief in one cause can overcome those negative factors and produce success from near certain failure.

The United States Hockey team, and the Winter Olympics in general, may have reminded us that as a country united under one cause there is little reason why we can't deprive the experts of a severe recession. Can 230 million citizens act as a team? They have during wartime, why not during peacetime? Can we forego selfish interests to help the entire team and thereby help everyone?

On my way to the GCSAA Show in St. Louis, I read a book by Howard Ruff titled *How to Prosper During the Coming Bad Years.* This is a textbook on economic selfishness, total lack of faith in a country, and how to beat the odds to save your family from possible economic suffering. Forget the rest of the country, look out for number one only. His type of attitude is the surest one to drive us into severe economic problems.

Fight the negative, selfish attitudes being pushed by such authors. Support your local banks and credit unions. Hold back to a reasonable degree your use of credit. Get financial advice and use local savings methods, certainly not foreign ones, although they would probably provide the best return on a short term. Remember, a healthy domestic economy is your best insurance against inflation and recession.

I know it may be termed corny, but be patriotic, show others you care about the team, and invest in its health. Pressure your representatives and senators for fiscal programs which are conservative and designed for long term economic stability. Tell them you want answers this year, before the election. Tell them you want a definite solution to Social Security financing. Tell them you are willing to make adjustments to achieve energy independence. These are the two biggest factors for our domestic economic health. Tell them that you want answers because you are thinking of more than just yourself. You're thinking of the team.

WT&T

LETTERS

The article in your February, 1980 issue, "Climbing vs. Bucket Lifts: Preferences in Tree Trimming" was a valuable, informative article. Opinions of professional arborists encountering specific and general problems are what make up the continuing advancement of arboriculture as a profession and voicing those opinions is a must if we are to improve the quality of the profession nation wide.

That Mr. Halsted is one of the leading arborists in the area is undisputed. I do, however, take strong exception to his statement that the City of Eugene's arboriculture program has been reduced to a "line clearing"operation.

Mr. Halsted's personal knowledge of the City of Eugene's program and commitment to arboriculture as a profession would have to be limited, since he left the City just 2 months short of 13 years ago.

To begin with, our selection process stresses total arboricultural knowledge, safety, climbing skill, abilities, and aerial lift abilities, in that order. Candidates for a position with our crew are put through a practical exercise involving climbing and aerial lift use. Our contention is, if the person cannot effectively climb, they would be of little use to us.

Continues on page 72

Underneath it all... Weather-matic®, the hidden secret of beautiful landscaping.

Call Your Nearest Distributor

DISTRIBUTORS

ARIZONA — Irrigation & Sprinkler Supply, Tucson (602) 792-4652; Sprinkler World of Arizona, Inc., Phoenix (602) 274-5407; CALIFORNIA — Aqua Flo Supply, Ojai (805) 646-7244; Aqua Flo Supply, Goleta (805) 967-2374; Associated Sprinklers, Inc., Sacramento (916) 452-8041; Bay Irrigation & Turf Supply, Concord (415) 825-9411; Carson Supply Company, Cypress (714) 826-5350; Carson Supply Company, San Diego (714) 582-4422; Circle R Irrigation, Yuba City (916) 674-3233; Controlled Irrigation Corp., Fresno (209) 222-4843; Kern County Equipment, Bakersfield (805) 324-9671; Lane Irrigation, Campbell (408) 377-5600; COLORADO — Denver Brass & Copper Co., Denver (303) 623-8888; CONNECTICUT — Shemin Nurseries, Inc., Greenwich (203) 531-7352; FLORIDA — Alachua Water Flo Supply Co., Inc., Gainesville (904) 372-7196; Alachua Water Flo Supply Co., Inc., Clearwater (813) 443-6907; GEORGIA—Lawn & Turf, Inc., Conyers (404) 483-4743; HAWAII—Hodges & Company, Kailua (808) 261-2540; IDAHO — Turf Irrigation Supply Company, Boise (208) 336-1694; ILLINOIS—Irrigation Engineering Company, Brookfield (312) 485-6023; KANSAS — Topeka Sprinkler Supply Co., Topeka (913) 272-2707; KENTUCKY — Irrigation Supply Co., Inc., Louisville (502) 583-6591; MASSACHUSETTS — The Clapper Company, Newton (617) 244-7900; MICHIGAN — Federal Lawn Sprinkler Supply Co., Southfield (313) 355-3023; Federal Lawn Sprinkler Supply Co., Grand Rapids (616) 247-0344; MINNESOTA — Advance Irrigation Supply Co., Robbinsdale (612) 535-7725; MONTANA — 2M Company, Inc., Billings (406) 245-3008; NEBRASKA — B H & L Enterprises, Lincoln (402) 477-8313; NEW JERSEY — Aqua Flo, Incorporated, Hammonton (609) 561-1777; NEW MEXICO—Neumark Company, Inc., Albuquerque (505) 345-7847; NEW YORK — Executive Landscaping, Buffalo (716) 681-3268; Long Island Irrigation Supply, Bay Shore (516) 667-2207 or 667-2210; Ratnik Industries, Inc., Victor (716) 924-9111; NORTH DAKOTA — Irrigation Systems, Inc., Fargo (701) 237-0440; OHIO — K & P Supply Company, Columbus (614) 253-7988; Welker-McKee Supply Company, Cleveland (216) 447-0050; OREGON — United Pipe & Supply Co., Eugene (503) 688-6511; United Pipe & Supply Co., Beaverton (503) 641-5989; United Pipe & Supply Co., Medford (503) 779-6721; United Pipe & Supply Co., Portland (503) 288-6276; SOUTH DAKOTA — Monick Pipe & Supply, Inc., Sioux Falls (605) 336-7811; TEXAS — Weather-matic Division/Telsco Industries, Dallas (214) 278-6131; Neumark Company, Inc., El Paso (915) 779-1086; Cross-B Company, San Antonio (512) 349-3953; UTAH — Thompson Distributing, Sandy (801) 566-1269; WASHINGTON—Advanced Irrigation Supply of Spokane, Spokane (509) 534-0489; H. D. Fowler Co., Inc., Bellevue (206) 746-8400; WISCONSIN — LaPlant Irrigation Co., Inc., Green Bay (414) 494-2132; CANADA — Diversified Tech Reps, Winnipeg, Manitoba (204) 786-1352; Ratnik Industries (Canada), Ltd., Mississauga, Ontario (416) 275-0995; Turf Irrigation Supply Ltd., Lethbridge, Alberta (403) 328-0924

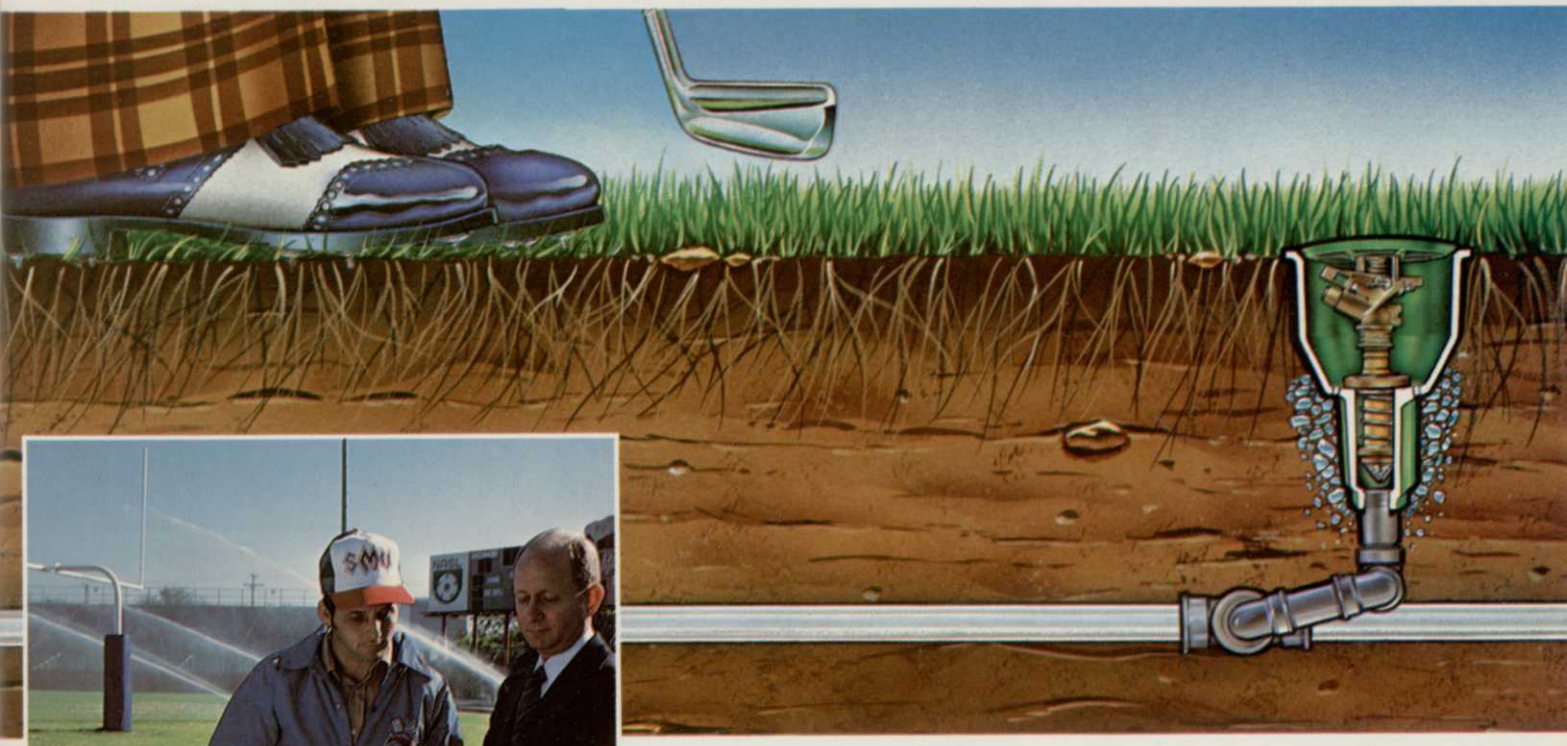
EXPORT DISTRIBUTORS

AUSTRALIA — Controlled Sprinkler Supplies, North Balwyn 857-9300; ENGLAND — Watermation, Ltd., Surrey Phone: (4862); FRANCE—Cogefrance, Paris (33) -1-278-1058; GREECE — Gefex Ltd., Athens Phone: 5236.737 or 5245.741; HOLLAND — Barenbrug Beregening B.V., Arnhem Phone: (31) 88-18545; IRAN — Techno Jaleh Co., Ltd., Tehran Phone: 934480; JAPAN — Okada Shoji Co., Ltd., Tokyo Phone: (03) 400 5130; PORTUGAL — TOR—Sociedade de Maquinas Agricolas, Lisbon (19) 779544; SAUDI ARABIA — Urban & Rural Development Co., Riyadh Phone: 24885; SCOTLAND—Watermation (Scotland) Ltd., Stirling Phone: Bannockburn 812469; SOUTH AFRICA — Flawn-Thomas Turf Irrigation Co. (Pty.) Ltd., Johannesburg Phone: 788-4832; SOUTH KOREA — Korea Explosives Co., Ltd., Seoul Phone: 23-0380-9; SWEDEN—AB Bevattningsteknik, Spanga Phone: 08/760 04 50

Weather-matic

LAWN SPRINKLER SYSTEMS

Underneath it all... Weather-matic®, the hidden secret of beautiful landscaping.



Ownby Stadium
Southern Methodist University — Dallas, Texas

"It's tough to maintain healthy turfgrass when your stadium field is used for pro and college soccer, plus college and high school football. But Weather-matic has helped us to get the job done right!"

H.R. Patterson, Physical Plant Director
Southern Methodist University
Dallas, Texas

Weather-matic helps you get the job done in many ways! We provide turf professionals all over the world with the right kind of equipment, specifically designed to water every type of grass, plant or shrub.

Our equipment is built to the industries' highest standards and operationally tested to make sure it's right before ever leaving the factory. So when you specify Weather-matic, you can depend on quality, cost-effectiveness and factory service that insures years of satisfaction.

Tough, dependable, field-proven Weather-matic products are available through a worldwide network of local distributors and dealers.

For the name of the Weather-matic distributor nearest you, or to get more information, send the coupon below or call us in Dallas at (214) 278-6131.

Weather matic®

LAWN SPRINKLER SYSTEMS

BOX 18205 DALLAS, TEXAS 75218 (214) 278-6131

Write **135** on free information card

Mail Coupon To: Weather-matic Division, Telsco Industries
Box 18205 Dallas, Texas 75218

Please send the following:
- ☐ Information about Weather-matic products
- ☐ Weather-matic Distributor Directory
- ☐ Information about TURF IRRIGATION MANUAL
- ☐ Assistance for pending project

NAME _____

TITLE _____

ADDRESS _____

CITY _____ STATE _____

ZIP _____ TELEPHONE _____

WTT

The Gr

Six great gas-power-tough trimmers:

MODEL 1900
High-quality economy trimmer.

Here is famous Green Machine quality and performance built into a new, low-priced 14.9 cc gas-trimmer. Unlike many low-end gas trimmers, The Green Machine Model 1900 has plenty of power—so much power that it comes equipped with two heavy-gauge long-wearing .080 Green Line cutting strings.
Coupled with great engine performance is a simple but effective 2-string, manual-feed cutting head. A TFC™ automatic-feed head is available as an option, as well as a new flexible rubber blade for fast trimming of weeds. Other features of the 1900 include a flexible, enclosed drive shaft, light overall weight for ease of operation, multi-position molded handle.

SPECIFICATIONS:

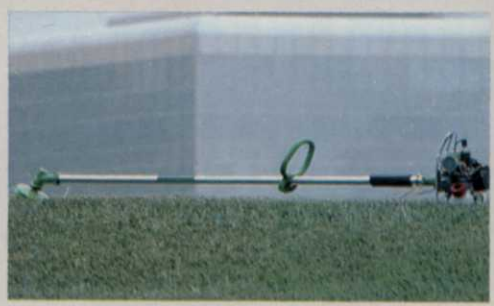
Engine Type: Inverted 2 Cycle Air Cooled **Cylinder Type:** Single Alum. Alloy Chrome Plated **Displacement:** 14.9 cc **Bore & Stroke mm** 27 x 26 **Compression Ratio:** 6.2:1 **Max H.P. (H.P/RPM)** .65/6500 **Carburetor:** Butterfly Type All Position **Ignition:** Contact Point Type **Clutch Housing:** Direct Coupled **Lubrication (Fuel Mixture)** 20 to 1 **Fuel Capacity:** (.4L) 42Qt. **Shaft:** Flex Type **Reduction:** None **Cutting Head (Std):** 5" Dia. **Cutting Swath:** 17 in. **Weight (with cutting head)** 10 lbs (4.5kg)

MODEL 2000
Loaded with Power.

This model is equipped with the popular 22.5 cc Green Machine engine. There's power to spare for the toughest string trimming operations. Standard equipment includes the reliable, manual-feed head. You can also use it with the optional TFC™ Tap-For-Cord head. A light tap on the ground automatically releases fresh cutting string. The Model 2000 can also be used with the new fixed-line head (.105 line). Other features include an all-position diaphragm-type carburetor with positive fuel shut-off. Power is transmitted through a rugged, enclosed flexible drive-shaft. As with the 1900, the mid-handle is easily adjustable to the operators height and can be quickly reversed when the unit is used for edging. It's a beautifully built unit, ideal for those that want additional power and efficiency.

SPECIFICATIONS:

Engine Type: Upright 2-Cycle Air Cooled **Cylinder Type:** Single Alum. Alloy Chrome Plated **Displacement:** 22.5 **Bore & Stroke mm:** 32 x 28 **Compression Ratio:** 6.5:1 **Max H.P. (H.P/RPM)** 1.2/6500 **Carburetor:** Slide Type All Position **Ignition:** Contact Point Type **Clutch Housing:** Direct Coupled **Lubrication (Fuel Mixture)** 20 to 1 **Fuel Capacity:** (.6L) .64Qt. **Muffler:** Spark Arrestor **Shaft:** Flex Type **Reduction:** None **Cutting Head (Std)** 5" Dia. **Cutting Swath:** 18 in. **Weight (with cutting head):** 11 lbs (5kg)



MODEL 2500
A great string trimmer—and more.

Powered by the proven 22.5 cc engine, here is a string trimmer—that's more than a string trimmer. Model 2500 comes equipped with a new Universal TFC™ head for fast, efficient grass and weed trimming. Just switch to one of the optional quick-change metal blades and you've got a great brush cutter or tree pruner. The performance of this unit in tough brush and pruning operations has to be seen to be fully appreciated. The brush blade lets you cut through heavy brush and vines up to ¾ inch in diameter. The saw blade, used with a combination chopping/sawing action can slice easily through branches up to three inches in diameter. It is equipped with a straight solid-steel shaft with spiral-bevel gears. Four optional heads are available for this unit—see chart on back page.

SPECIFICATIONS:

Engine Type: Upright 2-Cycle Air Cooled **Cylinder Type:** Single Alum. Alloy Chrome Plated **Displacement:** 22.5 **Bore & Stroke mm:** 32 x 28 **Compression Ratio:** 6.5:1 **Max H.P. (H.P/RPM)** 1.2/6500 **Carburetor:** Slide Type All Position **Ignition:** Contact Point Type **Clutch Housing:** Direct Coupled **Lubrication (Fuel Mixture)** 20 to 1 **Fuel Capacity:** (.6L) .64Qt. **Muffler:** Spark Arrestor **Shaft:** Solid type 8mm **Reduction:** 1.26 Gear Drive **Cutting Head (Std)** 5" Dia. Universal TFC **Cutting Swath:** 18 in. **Weight (with cutting head):** 13 lbs (5.9kg)

★ **Blades and blade guards shown in top photo are optional items**
★ **Fuel mixture ratios shown in specifications are with conventional 2-cycle oils. For convenience and long engine life we recommend ONE-MIX™, the great new multi-ratio oil p**

een Machine®

"STANDARD OF THE INDUSTRY"
MODEL 3000 SS Now with more power– plus solid-state ignition

Commercial-quality TFC™ Tap-For-Cord head equipped with Green Line extra long-life nylon string. (Model 3000SS, as well as 2500, 4000, and 4500, also accept metal blades for brush cutting and tree pruning.)

MODEL 3000SS

The Pro's Choice.

This Green Machine has set the standard for commercial-quality trimmers. Thousands are in use by professional gardeners, grounds maintenace crews, and large-acreage owners. The 3000SS has been made even better with a new, more powerful engine and solid-state ignition. Like the 2500, these units can also be used for brush cutting and tree pruning, using the accessory metal blades. Model 3000SS comes equipped with the commercial quality TFC™ Tap-For-Cord string trimmer head—the first automatic-feed head built for the professional. Other heads available include the ultra-simple, 2-string (.105) manual head designed specifically for rental-yard and other special uses. Quality features include: solid, heat-treated drive-shaft and spiral-bevel gears; anti-vibration clutch housing with dual bearings; larger, quieter muffler and air cleaner; larger gas tank.

SPECIFICATIONS:

Engine Type: Upright 2-Cycle Air Cooled **Cylinder Type:** Single Alum. Alloy Chrome Plated **Displacement:** 24.1 **Bore & Stroke mm:** 32 x 30 **Compression Ratio:** 6.5:1 **Max H.P. (H.P/RPM):** 1.3/6500 **Carburetor:** Slide Type All Position **Ignition:** Solid-State-Transistor Type **Clutch Housing:** Anti-Vibration **Lubrication (Fuel Mixture):** 25 to 1 **Fuel Capacity:** (.7L) .74Qt. **Muffler:** Spark Arrestor **Shaft:** Solid type 8mm **Reduction:** 1.26 Gear Drive **Cutting Head (Std):** 6" Dia. TFC **Cutting Swath:** 18 in. **Weight (with cutting head):** 15 lbs (6.8kg)

MODEL 4000

The high-production trimmer, brush cutter.

This is the high powered Green Machine designed specifically for specialized, day-after-day trimming of grass, weeds, and brush. A harness with hip-pad and wide handle bars provides maximum operator efficiency for such demanding operations as highway road-side maintenance. The 37.4 cc easy-starting engine has power to spare to operate the commercial TFC™ head with .105 cutting string. Other heavy-duty features include larger drive shaft and larger spiral-bevel gears. With accessory blades, the swiveling center shaft of the 4000 makes it ideal for hillside brush cutting and pruning of low-hanging tree branches.

SPECIFICATIONS:

Engine Type: Inverted 2-Cycle Air Cooled **Cylinder Type:** Single Alum. Alloy Chrome Plated **Displacement:** 37.4 **Bore & Stroke mm:** 38 x 33 **Compression Ratio:** 9.1:1 **Max H.P. (H.P/RPM):** 2.7/7500 **Carburetor:** Slide Type Float **Ignition:** Contact Point Type **Clutch Housing:** Direct Coupled With Swivel **Lubrication (Fuel Mixture):** 20 to 1 **Fuel Capacity:** (1.1L) 1.17Qt. **Muffler:** Spark Arrestor **Shaft:** Solid 10mm **Reduction:** 1.26 Gear Drive **Cutting Head (Std):** 6" Dia. TFC **Cutting Swath:** 20 in. **Weight (with cutting head):** 21 lbs (9.5kg)

MODEL 4500

The Green Machine Forestry unit.

Modern forestry practice demands fast, efficient tree and brush clearing. Here is the tool for the job. Using a combination chopping-sawing action, saplings up to 4 inches in diameter can be felled in a single stroke. One man equipped with the 4500 becomes a formidable system of forestry maintenance. This unit is specially-designed to withstand the continuous side-shock impact imposed by this type of work. Extra anti-vibration features as well as an exceptionally heavy-duty shaft are included. The special handle guards help protect the operator. The 4500 comes equipped with brush blade, saw blade and blade guard. The commercial quality TFC™ Tap-For-Cord head is available as an option.

SPECIFICATIONS:

Engine Type: Inverted 2-Cycle Air Cooled **Cylinder Type:** Single Alum. Alloy Chrome Plated **Displacement:** 37.4 **Bore & Stroke mm:** 38 x 33 **Compression Ratio:** 9.1:1 **Max H.P. (H.P/RPM):** 2.7/7500 **Carburetor:** Slide Type Float **Ignition:** Contact Point Type **Clutch Housing:** Direct Coupled With Swivel **Lubrication (Fuel Mixture):** 20 to 1 **Fuel Capacity:** (1.1L) 1.17Qt. **Muffler:** Spark Arrestor **Shaft:** Solid 12mm **Reduction:** 1.26 Gear Drive **Cutting Head (Std):** Blades **Weight (with cutting blade):** 22 lbs (10kg)

Contact your distributor or write today!

Write **173** on free information card

The Green Machine®

HMC, 22133 South Vermont Avenue, Los Angeles, California 90502

acs from The Green Machine. No guess, no mess!

DEALERS WANTED TO SELL THE NEW . . .

Compact Tractors from LONG

Compact, Fuel efficient 24 • 28 • 35 PTO Horsepower Diesels. Priced up to 25% below competitive models.

260-C: This compact 24 PTO H.P., 2-cyl. diesel includes as standard equipment: Continuous PTO, 6-speed trans., 3-pt. hitch with draft and position control, and more. Hydrostatic steering optional. The perfect tractor for turf and horticultural work. Wt. 3,180 lbs. (approx.). Turf or general purpose farm tires Price with 5.00 x 15/12.4 x 24 GPF Tires.

LIST PRICE: 2-WD — $5,525.00**

310-C: A 2-cyl. compact, 28 PTO H.P. tractor. Standard features include: Continuous PTO, 6-speed trans., 3-pt. hitch with draft and position control, and more. Hydrostatic steering optional. Excellent turf or small farm tractor. Turf or general purpose farm tires. Wt. 3,159 lbs. (approx.). Price with 5.00 x 15/12.4 x 24 GPF Tires.

LIST PRICE: 2-WD — $5,930.00**

360-C: A heavy-duty, compact 3-cyl., 35 PTO H.P. tractor engineered for outstanding performance and economy. Standard equipment includes: 6-speed trans., hydrostatic steering*, continuous PTO, 3-pt. hitch with draft and position control, and more. The ideal tractor for heavier turf work or small farm chores. Turf or general purpose farm tires. Wt. 3,630 lbs. (approx.). Price with 5.00 x 15/12.4 x 24 GPF Tires.

LIST PRICE: 2-WD — $7,204.00**

8 Good Reasons to Sell LONG Compacts:

- Small in size — BIG in power.
- Quality built tractors, priced up to 25% below competition.
- Fuel efficient — High performance diesel engines.
- Precision engineered to give outstanding performance and more horsepower per dollar.
- Dealer floor planning program.
- Dealer parts financing program.
- Regular dealer discounts, plus special incentive discounts.
- 7 convenient sales and distribution offices to serve you.

COMPARE PRICE AND PERFORMANCE, AND YOU'LL BUY LONG

**Hydrostatic steering to be phased-in on the 360-C.*

***Prices based on Long Mfg. N.C. Inc.'s current suggested list price, for standard equipped tractors with tires as specified, F.O.B. point of manufacture; and are subject to change without notice.*

LONG

LONG MFG. N.C. INC.

HOME OFFICE: TARBORO, N.C.

FOR MORE INFORMATION CONTACT:

Box 1139 (1907 N. Main St.), Tarboro, NC 27886 Tel. (919) 823-4151
Box 918 (2610 Hwy. 77 North), Carrollton, TX 75006 Tel. (214) 242-5102
Box 3928 (3863 W. River Dr.), Davenport, IA 52808 Tel. (319) 324-0451
Box 167 (Hwy. U.S. 41 South), Tifton, GA 31794 Tel (912) 382-3600
Box 13263 (1920 Channel Ave.), Memphis, TN 38113 Tel. (901) 774-6523
Box 259 (#8 Long Lane), Mechanicsburg, PA 17055 Tel. (717) 697-8277
906 Harney St., Vancouver, WA 98660 Tel. (206) 695-1259

Write **171** on free information card

GREEN INDUSTRY NEWS

Arborists emphasize self-help programs

Speakers at the National Arborist Association's annual meeting in Orlando accented the need of arborists to educate themselves and their crews through newly available materials.

"The Tail Gate Safety Program (developed by the NAA last October) provides good evidence that an employee has been instructed of the hazards he'll be involved in," said Rick Compton, safety director of Farrens Tree Surgeons in Jacksonville, FL. He noted that there are many safety programs but the Tail Gate is the only one acceptable to OSHA requirements, based upon standards of the American National Standards Institute.

Compton and others spoke to arborists representing 140 major tree services. In his speech, "Common Accidents and How to Prevent Them," he suggested requiring each employee take a driver's test, wait at least two weeks before operating a chain saw when starting with a company, and put aerial lifts on a regular inspection schedule.

Professor H. Dennis P. Ryan, III, of State University of New York at Farmingdale, said that arboricultural education is a problem in the schools and in small com-

Continues on page 14

Sod farmers approach 80's optimistically

An enthusiastic attitude toward the challenges of the next decade pervaded the meeting rooms of the American Sod Producers Association's midwinter conference, held in Orlando, February 24-26.

Although speakers and members cautioned of energy shortages, increased inflation, and hampering government regulations, the majority emphasized the value of their land and their ingenuity to overcome the problems.

Dr. James Beard, in his projection of what lies ahead in the 80's, said, "I'm optimistic. I think turf will be around for a long time." The Texas A&M professor of turfgrass physiology continued, saying, "If we lose turfs and ornamentals, the country will be in bad shape."

He said that turf varieties will no longer be developed on beauty contest standards, but on low energy requirements. Advances have come from extra nitrogen, irrigation, and other energy sources, but new cultivars will have to go the other way. Water will be scarcer, poorer quality, and more costly, and should be a special concern of the sod farmer, Beard said. There should also be increased use of effluent water and better management of irrigation systems.

In the 80's, there probably won't be any new pesticides on the turf market, Beard said. Not only are

Continues on page 16

Conservation is golf show message

The biggest North American turf conference, the International Turfgrass Conference and Show of the Golf Course Superintendents Association of America, was held in St. Louis in February. The meeting continued its growth in attendance and number of exhibitors, as well as the number of educational topics covered during the five day show.

Attendance was estimated at 7,500, an improvement of 1,500 from the conference in Atlanta in 1979. The convention floor was filled with nearly 300 exhibitors, from regular turf and irrigation suppliers to encyclopedia and sign companies. A person could easily spend a day just looking at exhibits.

But then, a complete range of concurrent educational sessions easily filled three other days. Conservation of water, fertilizer and energy and personal financial planning were the dominant subjects of the educational sessions. Critical basic knowledge of diseases, design, and irrigation formed a base for current interests. If one area was weak, it was herbicide use and developments in that area. Overall, the intent of educational session planners was to help superintendents avoid pitfalls common in challenging years.

In the same conservation theme, was Toro Chairman David McLaughlin's keynote address, "Are we savers or spenders?" McLaughlin urged superintendents to promote the value of golf courses to state and local officials and to dispel believes

Continues on page 67

LANDSCAPE CONTRACTOR NEWS

Ohioan offers cost saving advice

Art Landseadel, past president of the National Landscape Association, has offered the following advice to fellow contractors to cut costs.

Check insurance coverage to see that your insurance man has depreciated the value of insured items and reduced premiums accordingly.

Adjust coverage seasonally of resale items such as chemicals, stocked materials, and tools during the off season when your supply and its value is reduced.

Adjust telephone service during off periods. You may need fewer lines except during the sales season.

Offer fast pay discount of two percent to those customers that pay within ten days. Take advantage of similar offers from suppliers.

Contract out work to avoid fringe benefits of fulltime employees if the job is short term. Also lease equipment for short term jobs.

Take advantage of cooperative advertising in which the manufacturer offers to pay part of the advertising to get his product in use.

Consolidate business forms and billing to reduce printing and handling costs.

Void guarantee on past due accounts by terminology on contracts and charge late payers 1 1/2 percent interest per month after 30 days.

Add equipment/supervision charge to jobs to account for all overhead not considered when price structure was designed.

Every little bit helps and eventually adds up to a large savings.

California chapter selects Vandergeest

The Long Beach-Orange County chapter of the California Landscape Contractors Association, the largest chapter in the group, elected William Vandergeest of Vandergeest Landscape Care, Santa Ana, president. More than 200 landscape and irrigation contractors belong to the chapter.

Four vice-presidents were also elected to serve for 1980. They are John K. Budd, Budd Landscaping, Orange; Allen Chariton, Tierra Verde Landscape, Santa Ana; Wayne Duboise, Mission Landscape Service, Costa Mesa; and Bob Newton, Santa Ana.

Two more groups affiliate with ALCA

The Associated Contractors of Oregon and the Metropolitan Detroit Landscape Association became the 12th and 13th state and regional landscape contracting associations to formally affiliate with the Associated Landscape Contractors of America. Under the sponsoring member arrangement, member firms gain direct access to all ALCA publications and meetings.

ALCA creates interior division

A new division with its programs specifically for interior landscaping has been launched by ALCA. Laine Craft, owner of Living Interiors, Lake Park, FL, has been installed as chairman of the division. The Interior Division has scheduled several sessions on maintenance, a fullblown conference in Denver this fall, and a newsletter of its own. Under development is a Maintenance Procedures Manual expected for release late this year.

Arborists *from page 13*

panies which don't have their own training programs. He urged arborists to bring the NAA's slide/cassette program to schools, where there is not the time to teach practical experience.

Four ways to improve the profession, Ryan said, are: education, good publicity (support of arbor day), hiring women, and paying more for workers to get better performance.

Charles Cissel of Guardian Tree Experts and Ted Collins of Ted Collins Tree and Landscape Service said the slide/ cassette and Tail Gate safety programs can be very helpful for practical Integrated Pest Management (IPM). The question to consider for pest management, Collins said, is: "Is it safe, healthy, environmentally acceptable, and profitable?" He has promoted IPM through television, radio, public relations, advertising, and personal appearances.

Lively response came from Kenneth Morefield's talk on "The Wage and Hour Law, and Company Policies." The management consultant said, " Investigation of operations usually proves violations." Questions and disbelief from arborists showed that he was probably correct.

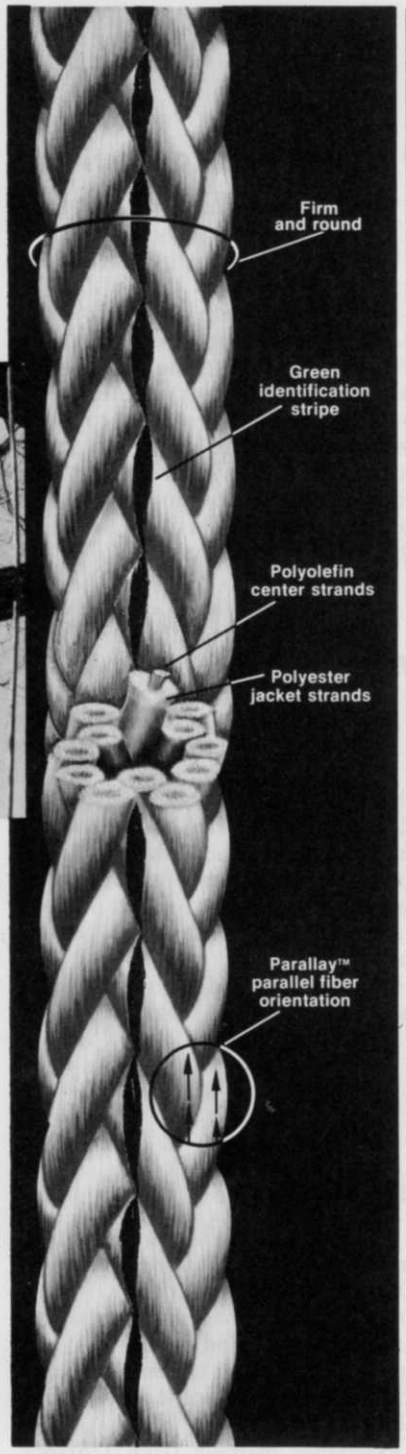
Speakers also shared their expertise on other governmental concerns, such as pesticide regulations and certification in the 80's; cultural practices, such as soil and foliage analysis and Dutch elm disease; and new technology, including computers. Members showed slides of innovative practices they have used to aid their operation.

The association honored the "Senator" cypress tree in Big Tree Park, Longwood, FL, with a bronze plaque. The tree is over 3,500 years old and has a dbh of 138 feet.

President Larry Holkenborg handed over his office to Bruce Walgren of Walgren Rree Experts, Inc., West Hartford, CT. Other newly elected members are: Walter E. Money, 1st vice president; Erik H. Haupt, 2nd vice president; Lee L. Lesh, secretary; Robert Mullane, treasurer; and William L. Owen, director.

Free Climbing Rope worth $57.

New, stronger more durable climbing, bull rope, Arbor·Plex™



Arborplex™ 12-Strand... a new Samson rope designed to replace manila for climbing and bull rope. Arborplex has been extensively evaluated in the field and has proven itself with these advantages.

- Twice the strength of manila
- New Duron™ II polyester for more durability
- Firm "nubby" surface for good grip
- Stays flexible, throws well
- Good knot holding
- Resists chemicals and UV, won't mildew

Arbor-Plex is now available through Samson Distributors. Send for descriptive literature and name of local source. Samson, Dept. AP, 99 High Street, Boston, MA. 02110

SAMSON
A Subsidiary of **ENSERCH** CORPORATION

How to take advantage of this offer:

1. Select a Bull Line
2. Make out a check payable to Samson for the amount of the Bull Rope
3. Fill out your shipping address
4. Take or send your completed form, including check, to your usual Arborist Supply Dealer.
5. Dealer will then forward check and form to Samson for redemption
6. Your Bull and Free Climbing Rope will be shipped direct from our factory.

Offer Expires June 1, 1980

Check one Bull Rope:

☐ 5/8" × 100 FT.	$ 81.
☐ 5/8" × 120 FT.	$ 91.
☐ 5/8" × 150 FT.	$105.
☐ 5/8" × 600 FT.	$302.
☐ 3/4" × 100 FT.	$ 98.
☐ 3/4" × 120 FT.	$111.
☐ 3/4" × 150 FT.	$130.
☐ 3/4" × 600 FT.	$395.
☐ 7/8" × 600 FT.	$572.

SIZE	STRENGTHS
1/2"	5000 LBS
5/8"	9000 LBS
3/4"	12,000 LBS
7/8"	17,500 LBS

Arbor-Plex™

Fill out and take coupon to your Dealer. Buy 1 Arbor-Plex Bull Rope and get 1/2" × 150 ft. Climbing Rope FREE! Make check payable to Samson.

name _____

address _____

city _____ state _____ zip _____

occupation _____ telephone _____

Dealers Imprint

Rope purchased:

size _____

Offer Expires June 1, 1980

Dealer Note:
For further information and immediate response on the "Tree-Up" Program, call Samson collect (617) 426-6550.

Look for our "Tree-Up" Displays in your Arborist Supply Center.

GOVERNMENT UPDATE

Carter blocks fertilizer shipments to Soviets

President Carter has won support from Congress for his decision to indefinitely block the shipment of one million metric tons of phosphate fertilizers to the Soviet Union this year by the Occidental Petroleum Co.

"The President has doubled the effect of the grain embargo," said U.S. Congressman Tom Harkin (D-IA). "And he has done so in a way that does not further penalize farmers, but instead, helps them by increasing the phosphate fertilizers available here at home."

Harkin led congressional efforts to convince the President to block the shipments until the Soviets remove their troops from Afghanistan. He argued that it made no sense to withhold 17 million metric tons of American grain through an embargo if we then allowed the Soviets to receive enough American fertilizer to boost their own production by about 20 million metric tons.

EPA responds to Dow's request for 2,4,5-T

Dow Chemical's request for EPA to withdraw its emergency suspensions of 2,4,5-T and silvex should be rejected, according to EPA's lawyer Dorothy E. Patton.

Patton cited several procedural and factual shortcomings in the Dow suspension request. She said, for example, that before the administrator could reconsider his suspension orders, Dow must show that new evidence is available to support its request. Patton argued that Dow failed to meet that test and that its request relies only on examples showing that some scientists disagree with EPA's regulatory decisions on 2,4,5-T and silvex.

She said that EPA's recently completed TCDD mother's milk studies could be construed as new evidence, but the significance of the study, which showed no TCDD residues, was "highly questionable."

USDA establishes energy centers

Two agricultural energy centers to make farmers and ranchers energy self-sufficient in ten years are being established in Tifton, GA, and Peoria, IL, by the U.S. Department of Agriculture.

At Tifton, scientists will seek new and better ways to generate energy on the farm and better ways for farmers and ranchers to put that energy to work. The programs at the Peoria center will concentrate on converting farm- or forestproduced biomass into fuel alcohol or petrochemical substitutes.

At the centers, scientists and extension officals from USDA's Science and Education Administration (SEA) will work in cooperation with a number of state agricultural experiment stations and universities.

The research will cost about $6.2 million. The SEA will fund the research at the Tifton energy center for the first three quarters of 1980 with $1.6 million, plus $200,000 for extension activities. In Peoria, the agency will spend $2 million, including $100,000 for extension work. Another $2.4 million will be awarded for university research projects on agricultural energy.

Sod *from page 13*

some countries doing a pretty good job without them, their cost is expected to rise 25 to 30 percent in the next few years. Target use will be the style of application.

Beard doesn't think mowers will be changed, but popularity of energy efficient models will. Energy is the major factor in the type of turfgrasses to be used. These will be of two types, Beard said: fast growing for high stress areas, such as athletic fields, and slow growing for aesthetic areas and lawns, which subsequently won't have to be mowed as often.

Beard also headed a session on warm season grasses. Dr. Richard Smiley from the department of plant pathology at Cornell University, and Dr. Robert Shearman, extension turfgrass specialist at the University of Nebraska, shared their knowledge in a session on cool season grasses.

Panel discussions by ASPA members on fuel saving tips and netting suggested changes in practices for the future. M.L. Beck from Alabama, said, "Saving fuel is a case of changing habits." Yet sometimes you have no choice but to do a job regardless of the energy costs. The panel on netting showed slides of the foibles and successes from using it, and all are convinced that its help in increasing production make it more attractive for the next 10 years.

Ralph White from Georgia explained how his company, Southern Turf Nurseries, is using brewery waste from Anheuser-Busch to raise sod. John Patton of Maryland showed the audience how he used aircraft to spread fertilizer over his fields. Other members talked about adapting their equipment and preparing their fields in less conventional ways.

Other stimulating talks came from Michelle Williams from Utah and Mike Swanson from Florida on their ways of marketing sod, and Richard Underwood from the Lyndon B. Johnson Space Center in Houston, TX, gave a dazzling display of what NASA is doing to help the farmer.

After the two days of talks, more than 100 participants out of the more than 700 who attended the conference, took advantage of the tour through R&D Sod Farms, Inc. given by Ed Davis. On a sunny Florida day, Davis led the tour to various levels of production on his 900-acre farm.

On the greens, the fairways...all around the links, inside the clubhouse and under all the sinks

DURSBAN 2E is the one insecticide that works. DURSBAN* 2E Insecticide is ideal for broad spectrum, multi-purpose insect control everywhere around the club. Outside, DURSBAN 2E gives you unsurpassed control of turf pests like chinch bugs, sod webworms and cutworms, plus ticks, chiggers and mosquitoes. It even wipes out bagworms and many other ornamental plant pests. Inside, it cleans up the toughest roach problems, and keeps working to rid your buildings and restaurant areas of insect pests. Ask your supplier about the one insecticide that really works, DURSBAN 2E. Just be sure to follow all the directions and precautions on the label. Agricultural Products Department, Midland, Michigan 48640.

DOW CHEMICAL U.S.A.

*Trademark of The Dow Chemical Company

DOW

Circle **152** on free information card

Your two-cents worth makes a lot of sense.

Over the years, your ideas, suggestions and criticisms have made so much sense that we've incorporated a lot of what you've said into the Jacobsen products you see here.

You've helped us develop new products, improve existing ones, and sharpen our service.

And in each case, the end result is always something from which you can benefit directly.

More reliability. More longevity. More safety. More comfort. More flexibility. More economy.

So the next time you feel like throwing in your 2¢ worth, go ahead. Talk to your distributor or write to us directly. Jacobsen Division of Textron Inc., 1721 Packard Ave., Racine, Wisconsin 53403

We hear you.

JACOBSEN
TEXTRON

Jacobsen Division of Textron Inc.

Circle 106 on free information card

THE GREEN CARPET RATIONALE COLLEGE MANAGERS TRY TO SURVIVE

By John L. Hart

College and university Grounds Managers are finding their budgets severely tightened. Here are the reasons why grounds funding is shrinking, a bold approach to reverse the trend and help your institution at the same time, and some specific strategies to employ in attaining this goal.

The situation in higher education

Higher education is being forced to consider days of declining enrollments and declining interest in the college degree. The harsh facts are that the number of 18-year-olds in the population has begun to drop, and among that lessening number the proportion enrolling in college has been declining for some time. Whether a home-town college of 500 students or a mega-versity of 50,000, the pinch is here or gravely anticipated.

Reactions may vary from the "see-no-evil" syndrome or blind fear to sound fiscal planning, but regardless of the approach, the golden years of the Fifties and Sixties are one to three decades in the past. Budgets will be cut and staffs will be reduced. Public or private, small or large, sectarian or secular, a decrease in services (administrative, academic, and auxilliary) is inevitable.

What does this mean for grounds maintenance personnel and for you, the grounds manager? To a large extent it depends on your institution's approach to the exterior campus, and on your ability to demonstrate to superiors the continuing and increasing value of yourself, your staff, and your services. Since this is not necessarily a clear-cut task, some background material on the campus situation may help clarify the problem.

When the budget cuts come, the maintenance/support staff is usually particularly hard-hit. Academic departments argue that declining faculty will force students to go elsewhere for better programs; administrators, who finally make the budgetary decisions, feel that top management cannot realistically be pared—who would then make the management decisions which would save the institution? The area that remains is the physical plant, including the Grounds Department. The faulty argument is that the facilities and grounds can slide a few years without apparent damage.

So when the crunch comes to the college, the physical plant is usually dealt a disproportionate share of the reductions. Where can cutbacks be made? Unfortunately, it is usually in the support personnel staff itself. Most plant departments cannot cut back significantly and continually on supplies such as fuel, paper products, floor wax and lawn mowers. Indeed, given the astronomical rise in the costs of such materials, this budget might more sanely be expanded.

Conservation can undoubtedly help, but selling a large conversion program is difficult when money is scarce. Further, supplies are only a portion of the budget. Excluding utilities, most of the cost of running the plant is tied up in personnel. Thus, the maintenance staff often bears the burden of financial cutbacks directly — people are simply ruled a lower priority.

The top decision-makers realize of course that on-going maintenance of buildings and grounds is important and necessary, but there are additional reasons — some good and some not so good — for reducing the service budget.

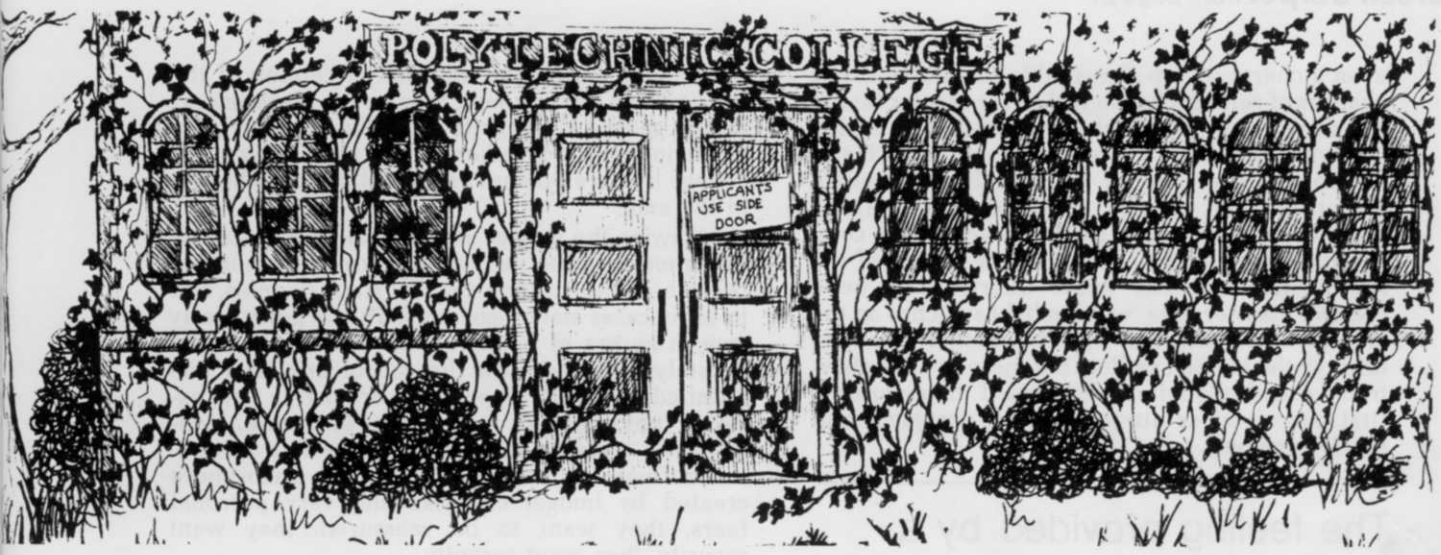
Firstly, it is undeniable that there are often inefficiencies in that (or any) department. If productivity and efficiency can be increased, so it is reasoned, the work can be done by fewer people. The transition period in such a situation is difficult indeed. Supervisors and foremen must be prepared for the difficult decisions of where to cut staff and/or services and how to achieve a new and sufficient stability. There may also be significant staff morale problems, and the manager will certainly have to work a lot harder at efficient yet responsive supervision.

The ability to successfully relate to and manage the people resource, and to correctly identify priorities, will be — as always — the supervisor's principal responsibilities. The importance of a good manager cannot be overemphasized; to a large extent he will be the difference between the program succeeding or failing. But in spite of such problems a shift to reduced staffing has been successfully undertaken and accomplished. That it can be done in all situations, or even that such a radical approach is in most cases the most reasonable and effective one, is highly questionable.

Secondly, it is commonly rationalized by upper management personnel that "temporary" cuts in maintenance services can be weathered: some services can be cut back and preventative maintenance programs can be curtailed or put on hold until the fiscal sky brightens again.

The problem here is that the weather outlook is pretty damn gloomy. Reductions in services and preventative maintenance programs may well be permanent, resulting in rather stormy predictions for the long-term condition of buildings and grounds. The permanence of the reductions, as well as the resultant decline of facilities, would seem apparent to all. The contrary is often the case. Even at this late date many institutions, especially those who feel they cater to a particular group (based on religion, social class, locale, race, etc.)

John L. Hart served as Director of Grounds for Augustana College in Sioux Falls, S.D., where he developed innovative yet inexpensive landscape structures to add character to the campus, as well as other methods of maximizing productivity of the campus grounds crew. He has an M.S. in forestry from Michigan State University.



feel themselves — and themselves alone! — peculiarly immune to the obvious statistics. Thus a reduction in maintenance staff, falsely seen as temporary, can only too easily be rationalized.

For an excellent expansion of some of these ideas, and for some sensible approaches to the problems of management during these times of fiscal cutbacks, see a paper by Dr. Harvey H. Kaiser, "Reduction Planning: Managing in an Era of Declining Resources" (NACUBO Professional File, Vol. 8, No. 7, Sept. 1976).

A third force, and a strong one, behind disproportionate cuts in maintenance and grounds budgets is the political situation: not the next elections, but the in-house politicking that goes on at every school. The faculty may squabble endlessly among themselves and work out its own priority system for who goes and who stays, but they can present a large, strong and united front when seriously threatened by the administration and regents. The upper levels of administration also represent a great deal of power, especially when directed at self-preservation. Both groups can be tight-knit and exclusive, are well-educated and skilled at debate, and have the audience of the final decision-makers.

It is unfortunately rare for the facilities and grounds managers to be in close and direct contact with either of these higher-level groups, or with other administrators on the same level. Periodic cross-staff managerial meetings help, of course, but unlike the groups mentioned above, there may be little understanding either horizontally or vertically as to what the real needs and problems in the physical plant and Grounds Department are.

Given a choice between cutting academic programs, valuable administrative functions, or custodians and groundskeepers, the outcome at a college seems obvious. In the latter case, the cut is quick, an immediate feeling of austerity is achieved, and the upper levels are relatively undisturbed.

This is perhaps the most disturbing fact of all.

The green carpet rationale

The reasons are many for the first and most severe financial reductions during college or university fiscal cutbacks to be carried out in the Physical Plant area. When that occurs and it comes to setting new priorities within the division, the grounds portion is often the one to suffer most quickly and most heavily. A well-kept and developing exterior campus is viewed as an expendable luxury. Like white side-walls and extra chrome on a new car, grounds care is seen as being easily reduced, while still retaining the basic, practical, functioning thing. This is largely based on a lack of understanding of the complexities and importance of grounds care, coupled with a recognized need to preserve other programs and services within the Physical Plant and within the college.

In the midst of this pressure from the top on down to cut grounds maintenance and development programs, what can be done to prevent degradation and deterioration of the campus? How can the Grounds Department maintain its standards, its already tight schedules, its often marginal maintenance operations, much less the improvements which are needed?

Actually a very logical answer lies in increasing the grounds budget. This is a serious suggestion that has more to do with states of mind than with fertilizer and irrigation, and more to do with university realities than with life cycles of aphids. A period of financial stability and fear on campus — particularly as this attitude soon seeps out into the public arena — is the very time when the utmost attention must be placed on good grounds upkeep. Higher echelons must be convinced of this fact, and convinced to act accordingly. The Grounds Manager must go to work in new fields: public relations, business, sales and debate.

The reasoning behind this is obvious but often overlooked:

—Appearances are extremely important.
—The college is a business.
—People need to be sold on an idea.
—To sell an idea you must believe in it, hence it must be good.

To expand on these statements, appearances are important and first impressions are crucial. Returning to the luxury vs. no-option car, the real estate agent, though he may be near bankruptcy, will choose the white-walls, the extra chrome, and

Continues on page 22

even a cherry on top if available as an option. His chances of selling a house will be far greater than if he drove the practical stripped-down model. Likewise, the house he sells will sell much faster and for a higher price if the lawn is well-tended, and trees and shrubs plentiful and healthy. Moreover, the effects of good appearance are compounded by the particularly lasting effects of the first impression. The house interior may be a relative disaster area, with no light switches on the ground floor and an upstairs bathtub leaking through the kitchen ceiling, but these are somehow transformed into minor problems if the exterior is first perceived as attractive, well designed, and nicely groomed.

The feeling provided by a beautiful campus may be an important aspect of the student's ability to enjoy the college and to absorb education efficiently.

This applies in similar fashion to the campus. Increasingly, education is becoming a competitive business enterprise. Students are pursued aggressively by the Admissions Department, made up basically of salespersons, the product for sale being not just education but the college itself. Increasingly, enrollment is the name of the game. Prospective students are mailed color brochures with no few photographs of the grounds, and are brought to campus by the busload to "look around". Many have little idea of what they want in terms of education, so that their highly subjective "feeling" for the place may be a very decisive factor in their choice. And this feeling is influenced considerably by that lasting first impression and the personal experience of the campus environment. Indeed, if environmental psychology has some sound basis, this feeling may be an important aspect of the student's ability to enjoy the college years and to absorb the education efficiently.

These ideas also pertain to another source of college revenue, the prospective donor. Quite often, the donor is one who has been successful in business or as a professional, and has been successful as a result of good investments and shrewd business sense. Also quite often, he views the possible donation to the college as another investment, one with less tangible and often eccentric rewards, but still an investment.

As in business dealings, this person needs to be convinced that the investment will be a sound one. Unmowed turf or weeds in the flower beds will have a far different affect on the "business deal" than a neatly manicured lawn and a well arranged weed-free floral display. This is equally true for the alumnus, another type of donor and one who is very interested in positive change and progress at the Alma Mater.

The first impression and the perception of the total college environment may be far more important in getting a pledge than all the dinners, tours and cajolings put together. For all the selling of the college by development personnel, the eyes have it in the end.

Likewise the college is in a continuous state of being marketed to its own in-house community of regents, administration, faculty, staff, students, and in some cases state legislators. This is particularly true in an era of fiscal reduction, when those intimately involved with the school are most disgruntled, worried, depressed, or angry. The exterior environment surrounds everyone, continuously molding impressions, affecting morale, and influencing attitudes. Given the atmosphere created by budget cutbacks and very personal fears, they want to be reassured, they want security, they want serenity.

Although some changes must come, and may indeed be welcomed, nonetheless a sense of stability and continuity must be maintained at all costs. Nowhere is this more important and more pervasive than in the campus exterior. A walk to the union for lunch past an overgrown hedge surrounded by last week's party cans will be very different psychologically than the same walk past a well-trimmed hedge and an unlittered campus. Multiply this walk by four times a day and 500 or 5,000 people: the total effect is enormous.

Thus, in the real sense that the campus is everyone's front yard, and additionally a welcome-mat and symbol of the college, grounds maintenance and development should be among the **highest** priorities and among the last to undergo budget reductions. An appearance of strength, stability, progress, and good business-like management must be maintained and improved upon.

This is not a particularly novel idea — certainly Madison Avenue has been using it for decades — but in many cases it has been slow in reaching the Grounds Department. Once it does, and once you believe it, the next step is to jump on the mower and cut a wide swath. That is, the college must understand the concept, accept it, and help implement it. The most logical person to spearhead this "Green Carpet" campaign for environmental awareness and improvement is the Grounds Manager.

Implementing the green carpet plan

If a college draws its belt one notch tighter, the Physical Plant Division is required to go three and the Grounds Department five. That's a significant squeeze, especially if the belt was snug to begin with.

In a real sense the campus is everyone's front yard, and a welcome-mat and symbol of the college. Grounds maintenance and development should be among the highest priorities. The grounds manager is the logical person to lead this "Green Carpet" campaign.

Such a bold step should not be taken hastily. There is a great deal of necessary departmental

Continues on page 24

BIG TRACTOR FEATURES BROUGHT DOWN TO SIZE!

Yanmar Pioneers Power Shift... 'Live' PTO in Compact Tractors.

No other tractors in their class offer so many exclusive features to save time, energy and money.

Power Shift... A new standard of work efficiency and compact performance. Clutchless on-the-go shifting to keep you going where others bog down. Power Shift has all the power and economy of a regular transmission and the ease of automatic, but without the 25 to 30% power loss of hydraulic or hydrostatics.

2-Speed 'Live' PTO... Drives implements independent of the Power Shift Transmission to keep the implement performing at full power even if the tractor is stopped . . . another compact exclusive feature that means faster, more efficient work.

More Standard Features . . . These models also have the best features of other Yanmar-built tractors. Like Thermostart, our cold weather starting system, Category 1 3-point hitch for easy on and off Yanmar-matched implements.

World Famous Yanmar 3-Cylinder Diesel Engine... Only the world's largest seller of small diesel engines could develop a smoother, quieter engine that keeps on delivering economical, dependable service year after year after year.

Farming, landscaping, building, mowing... whatever the job, if you use a tractor...

You Can Use a Yanmar!

For more information write:

YANMAR TRACTOR [U.S.A.], INC.

476 Country Club Drive
Bensenville, Illinois 60106
(312) 860-5370

analysis and evaluation, followed in turn by delineation of program alternatives, making public the alternatives, eventual acceptance and implementation of one program, and finally (always!) renewed evaluation of its successes and failures. This is basically a simple management outline, but one geared to the problem at hand: how to deal with the college fiscal crunch, and even come out ahead — both the grounds and the college.

Departmental Evaluation. In any good management scheme, evaluation of the department and its operation is less a step than a constant and continuing process. When a budget reduction has been implemented or is foreseen, the time is particularly ripe for a complete and indepth investigation of the organization. Can any supplies be cut, or sources changed? Is each piece of equipment the proper tool for the job? Can rates of equipment turnover be changed without hampering the work? Can little-used or "back-lot" equipment be traded for more useful tools? Is energy being conserved or over-consumed? Can high maintenance areas be re-designed cheaply and aesthetically? Does contracting make better sense than doing a job in-house, or vice versa? Are people being properly employed, or should some be shifted horizontally or vertically, or should some have been replaced months ago? Are you using your time efficiently and productively? Is there good communication with and support from higher levels, and from other segments of the college? Are there possible sources of additional funds which could be explored? How are time and money being spent? What are the priorities — and why?

Cuts to consider may be redesigning high maintenance areas, contracting out infrequent tasks, trading in old equipment for more efficient models, and finding other sources for funds for the department.

Delineation of Program Alternatives. While making this in-depth analysis of the department, three different levels of operation should be considered: Perservation, Maintenance, and Development. These must be delineated as clear alternatives, keyed to the possible fluctuations in the college fiscal situation. **Preservation** is the bare-bones, base-line budget, in the event of a present and inescapable financial crisis. When the college is seriously considering shutting its doors — and afterwards — this level of funding will preserve the investment and nothing more. The budget might include almost all vehicles in storage, a crew of two workers (or contract) to keep the campus up to government code and to do maintenance chores infrequently, a basic utilities outlay, low-level upkeep on paved surfaces, etc. This is the "shock-therapy" budget, and it is a healthy thing to do: it may demonstrate new methods of approach to old problems, it may energize the Grounds Manager and others to help prevent such a collapse, it will show that a wide range of alternatives is being analyzed, and if nothing else, it will make clear the bare essentials of the grounds operation.

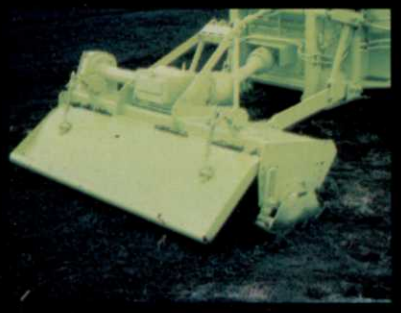
The **Maintenance** budget alternative represents a situation most likely better than that which now prevails. It should represent what the Grounds Manager sees as a strong, healthy grounds management and maintenance operation. This might include a full productive staff and crew, periodic salary increases, the proper equipment, timely replacement and updating of equipment, sufficient supplies and stockpiles, a reasonable budget for expansion and development, etc. This level certainly makes provision for that extra truck or additional Groundskeeper II, and if followed will eventually lead to completion of the campus grounds development plan. It is a budget geared for environmental improvement: The Green Carpet.

The **Development** level is the "blue sky" budget alternative. It is in essence the long-term development and management plan for the campus grounds. Given a high level of resources, it is what the grounds manager sees as the desired, ever-progressing future of the campus: healthy, lush vegetation is well-placed and expanding, flowers are in increasing abundance; all walks and drives are functional and attractive; old eyesores are gone or hidden, and more outdoor sculpture and comfortable plazas add to an improving general atmosphere; grounds vehicles and equipment can reliably handle any in-house task; the grounds hierarchy is efficient and effective, and the grounds crew is sufficient in quantity and quality to see that the work is of high standards and is accomplished on time.

Developing this alternative allows the grounds manager to re-evaluate and re-structure ideals, to be reminded of the over-all goals of the operation, to retreat for a moment from the daily routine, to sit back and dream. The plan as developed on paper will show the manager and others where the campus is headed. It is a highly positive alternative, and the discrepancy between the present and the future state should provide a high level of enthusiasm and motivation.

The above three alternatives should be the only possible programs to be considered. They represent the two extreme situations — unlimited budget and budget collapse — and offer a third, middle-of-the-road approach to be taken in all other college financial situations. Additional alternatives will only serve to create conflict and confusion, clouding the real issue: in all but the worst of financial regimes, the Grounds Department must be allowed to progress toward its short-term and long-range goals. Further, there is room for compromise, if necessary, within each of the three alternatives. Each contains both higher and lower priorities, and

Continues on page 29



SWINGER®

Swinger is a natural for landscaping. Its 80 degree articulated steering allows you to maneuver in tight quarters without tearing up the surface. There's no skidding. Swinger features simple hand and foot controls; 4-wheel hydrostatic drive; front-rear frame oscillation; water cooled engines; towability.

Choice of five models with 1/3, 2/3 and 1 yard capacities; lift trucks from 2,500 to 8,000 lb. capacities. Contact Dynamic Industries, Inc., Box 466, Barnesville, Minnesota 56514.

Call Toll Free
1/800/346-4858
In Minnesota, Call (218) 354-2211

Write **155** on free information card

SEVIN® WORKS
WHILE PEOPLE
PLAY.

On one hand you have pests. Destroying. Damaging. Stinging. Biting. Annoying.

On the other hand you have people. Out-of-doors people. Living. Working. Playing. Camping.

That's why SEVIN® carbaryl insecticide is the answer to your professional grounds maintenance needs.

Versatile, broadly registered SEVIN controls as many as 44 insects that attack trees, shrubs, flowers, turf...and people. And it has a long record of effective control of target pests.

Environmental concern? That's another good reason to use SEVIN, since it is biodegradable, and has no objectionable odor. When compared to other commonly used insecticides, it ranks low in toxicity to people, farm animals, birds and fish.

STOP! ALL PESTICIDES CAN BE HARMFUL TO HEALTH AND THE ENVIRONMENT IF MISUSED. READ THE LABEL CAREFULLY AND USE ONLY AS DIRECTED.

SEVIN controls these 15 major pests. Plus 29 more!

It offers other benefits too. SEVIN is compatible with many commonly used fungicides, miticides and other insecticides. Choose from several formulations to best fit your specific needs.

People. Pests. Professional grounds maintenance. SEVIN carbaryl insecticide. They all go together.

For more information about SEVIN, contact your pesticide supplier or Union Carbide. Find out first hand why SEVIN is one of the world's leading insecticides.

UNION CARBIDE

SEVIN IS THE ANSWER.

CARBARYL INSECTICIDE

SEVIN is a registered trademark of Union Carbide Corporation for carbaryl insecticide.
UNION CARBIDE AGRICULTURAL PRODUCTS COMPANY, INC., 7825 Baymeadows Way, Jacksonville, FL 32216

Write **120** on free information card

No mixing, no burning, no hassle.

Introducing FOLIAN®.. the easy-to-use liquid fertilizer that's safe and effective on any kind of turf.

FOLIAN is a complete fertilizer. Its special formulation of N-P-K, sulfur and iron gets nutrients directly into grass tissue. And FOLIAN will not cause tip burn when used as directed.

Convenient to use

FOLIAN is the only turf-builder you'll ever need. It saves you time because there's no mixing or agitation required before using FOLIAN. And FOLIAN can be applied in more concentrated form than most other liquids. As a result, you can service more lawns per truckload with fewer wasted man-hours.

A clear solution of the highest quality, FOLIAN won't settle out in your tanks. It's compatible with most pesticides, too.

Greens lawns fast

Because of its patented formulation and foliar activity, FOLIAN greens up turf quickly—faster than dry fertilizers or suspensions. And at the recommended rates, FOLIAN supplies enough residual fertilizer in the soil to keep grass green and healthy for many weeks.

Good for your business

Your customers will love the results FOLIAN gives. And you'll appreciate FOLIAN's convenience.

Best of all, FOLIAN makes your lawn care service more valuable. It means repeat business from satisfied customers and greater confidence in you.

Give FOLIAN a try and discover how it can mean more green for both of you.

To find out more about how to get started using FOLIAN, call toll-free 800-228-2178 Omaha, Neb., 800-446-1841/800-446-1845 Hopewell, Va. or write Allied Chemical Corporation, Dept. AG, Box 2120, Houston, TX 77001.

Allied Chemical
Plant Foods

Write **119** on free information card

FOLIAN® complete liquid fertilizer.

Green Carpet *from page 24*

the reasoning behind such rankings. So while the alternative programs should be clearly delineated and bundled into neat comprehensible packages, there is room for compromise much later down the road when the actual bargaining begins.

Marketing. People may cringe at the terminology, but marketing — or spreading the word, if that phrase is more pleasing — is wise and necessary. As the college must in a sense sell itself to prospective students and donors, the grounds manager must sell his or her grounds program to superiors, to the administration as a whole, to the faculty and students, and to regents and donors. As previously mentioned, the college or university is a highly politicized organization and people's votes must be won. Once the alternatives for grounds management are detailed and clear, it is time to let others know what each alternative will mean for the campus and for the college. This phase should focus on the Green Carpet plan, but also must make people aware of the upper and lower alternatives: the dream, and the disaster.

Where should this marketing start? Hopefully it would have begun at a much earlier stage with the personnel immediately above and below the grounds manager. This would include not only direct information presentation from the manager, but also valuable feedback and improvement from the same department. Beyond that sphere, it is surprising how many on campus are highly receptive to the idea of quality grounds maintenance and improvement. Faculty in such departments as Art, Botany/Biology, and Athletics will be especially interested, for obvious reasons, along with selected persons in Admissions, Development, and the Administration. Further, there will be certain faculty and staff with special related concerns, such as sculpture, roses or other flowering plants, architecture, lawns, or general campus appearance and beautification. A wide range of people today have special environmental or artistic concerns, and would like to see — and help realize — environmental improvements. These must all be sought out and convinced.

Beyond that, a larger number of people will be interested in the campus appearance if they can but hear the grounds manager's ideas and plans. In fact, many will be excited and enthusiastic about proposed improvements and changes, even during hard times. The only work is to make such people aware of the situation and get them talking. This needn't be difficult, particularly after gaining the obvious interests previously mentioned. Informal meetings with faculty and staff, talks over coffee, or short presentations at lunches are simple and valuable. A more formal slide-show presentation open to the college community is not much work and may reap large rewards. Simply increasing the time out on the grounds will foster meetings, expressions of interest and concern, and discussions of the campus future. It is, after all, everyone's concern.

Acceptance. It is very likely that a great deal of interest and support will be generated in a very short time. Particularly during an era of relative crisis, the college community will be caught by the idea of grounds progress and change — these are indeed healthy changes.

Once support is mustered, it is time for action. This may come through the normal chain of command, or through a leap-frog action to a higher official, up to the President, or through a special committee the Grounds Manager has helped inaugurate to consider the question. There will probably be less resistance and more enthusiasm than is imagined. After all, the ideas are sound, the support is there, and the expense is minimal relative to other operations. This may seem simplistic, but if the foundation has been properly layed, the outcome is almost a forgone conclusion. It is not a matter of empire-building or self-preservation, but a step toward preservation of the college.

A wide range of people today have environmental or artistic concerns, and would like to see improvements.

If the plan is accepted only in part, it may be time for compromise. If it is rejected as a package, there is enormous error in plan or approach. While deprecators will surely be present for a variety of reasons, they should not be in the majority. If so, the manager must solicit feedback from the college community, re-evaluate and modify the proposals as necessary, and try again.

Implementation. Once the Green Carpet plan has been accepted, it must be efficiently and conscientiously implemented. If the initial evaluations, establishment of priorities, and concrete proposals are valid, the final step is simple realization of those plans. The process is good management.

The Grounds Department will be even more visible than in the past, and it must meet the college community's expectations. More than any other department, the Grounds Department is on continous public display. It must be well-organized, well-trained, understand its tasks and goals, and pursue them with efficiency, knowledge, and diplomacy. All of these qualities must emanate from the Grounds Manager.

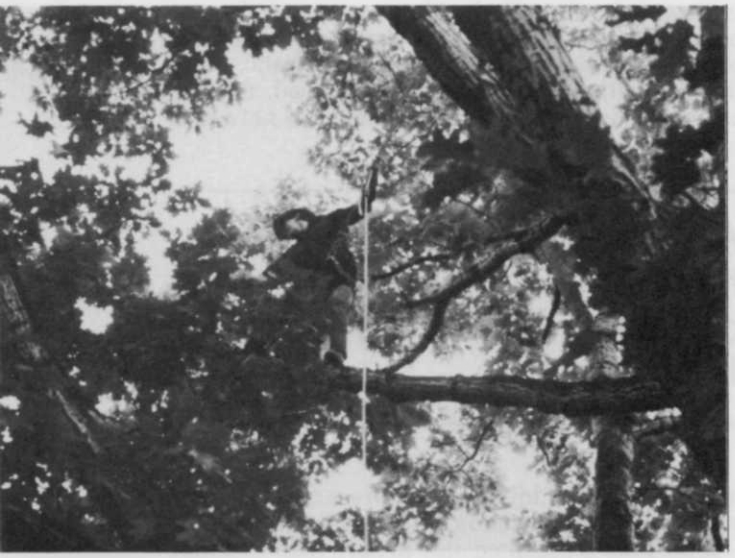
And once the plan is in effect and running smoothly, the time is ripe for re-evaluation, for this is the essence of any well-managed operation. The Grounds Department must continue to demonstrate its worth and value, and good management is the key.

In conclusion, good grounds care won't save a mismanaged college, or a college with chronic student decline. The grounds budget cannot be expanded at the expense of rapidly deteriorating buildings. Four new groundskeepers can't be hired when the faculty is losing ten professors. The point is that the campus Grounds Department must be granted a higher priority than it has received in the past, and that the benefits for the college will be significantly greater than the costs.

In the end, the eyes will have it. **WTT**

TWO-YEAR ARBORICULTURE PROGRAM IS WHAT THE INDUSTRY ORDERED

By Maria T. Cinque, Extension Agent, Nassau County, New York



Student practices trimming (above) in the program. **A secure and proper knot** is vital to safe tool transfer. **Tree survey techniques** and recordkeeping (below) for future municipal arborists.

The State University at Farmingdale, Long Island, New York, a two year Agricultural and Technical College has added a new option to its curriculum in Ornamental Horticulture. This new area of study is in Arboriculture. Over the years, the State University has offered courses in Arboriculture but this is the first time that the College has had a program designed to train students to work for Professional Arborists.

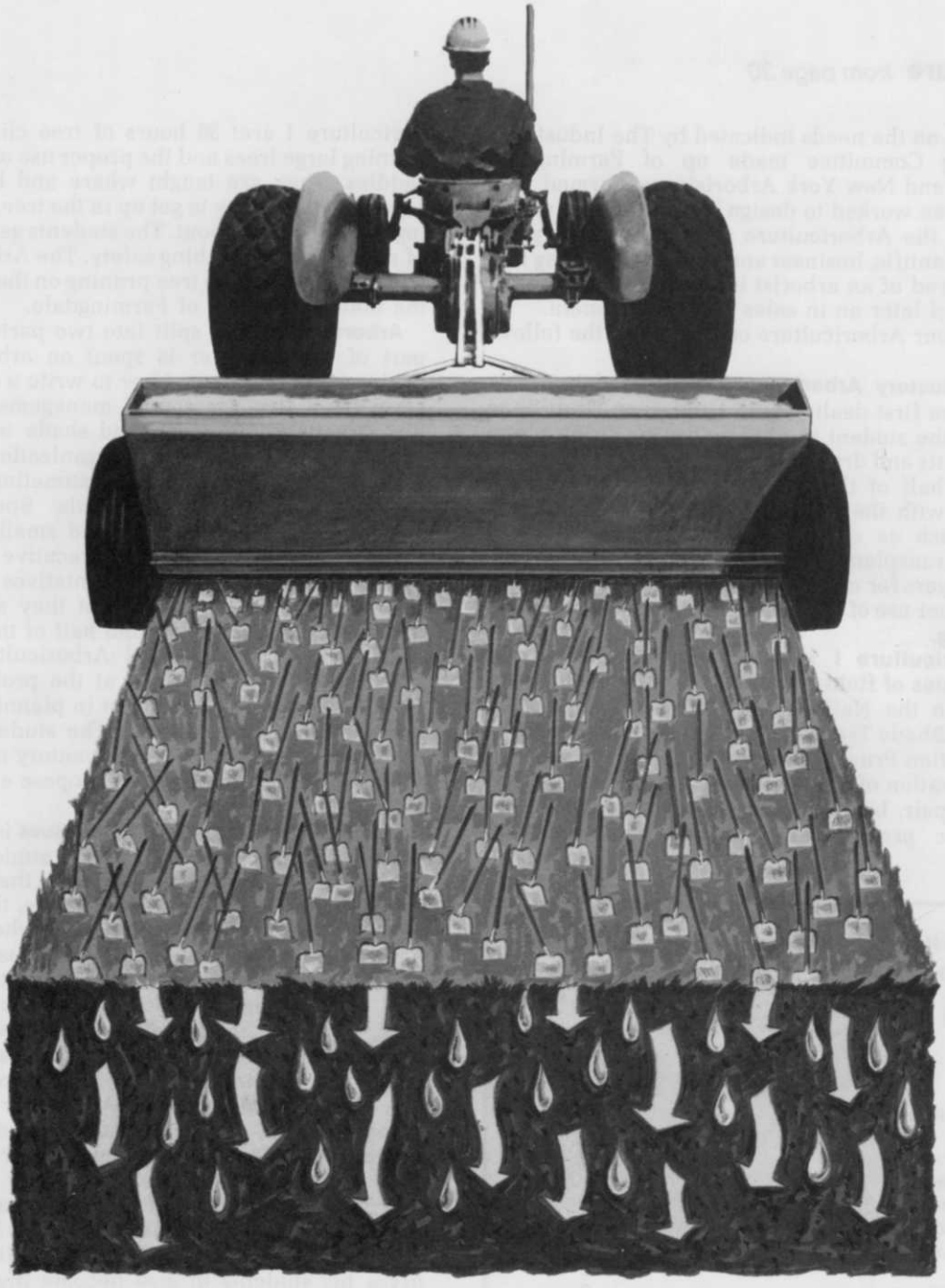
Since September of 1978, students wishing to pursue an Associate Degree in horticulture now have the Arboriculture option to choose from the already established areas of study in: Floriculture, Horticultural Management, Landscape Development, Nursery Management, and Turfgrass Management.

The Arboriculture Program Leader is Professor H. Dennis P. Ryan III. Professor Ryan's background in Arboriculture is both technical and practical, with an A.A.S. degree in Arboriculture from the Stockbridge School of Agriculture in Massachusetts, a B.S. degree in Environmental Design, and an M.S. degree in Forestry; both B.S. and M.S. degrees are from the University of Massachussetts. As for the practical side of his experience, Professor Ryan worked professionally as an arborist for about nine years in the Massachusetts area.

Arborist industry wanted the program

Both the Long Island Arborist Association and the New York State Arborist Association were instrumental in getting the State University to include Arboriculture as an option in their two year Ornamental Horticulture Degree Program. Letters poured into the President's office at the State University from local arborists and landscaping firms, as well as from local, state, and national trade associations. Most felt the Industry's biggest problems were in attracting young and qualified personnel to the field of Arboriculture; for arborists require specialized skills, such as climbing, tree spraying, pruning, cabling, bracing, cavity work and diagnosing tree problems. Letters from the industry indicated that much time was required to teach men and women these technical skills to become competent arborists. They also indicated that such a program would greatly help to improve the quality of the personnel in the tree care industry and also expand the industry.

According to the National Arborist Association (NAA) there are very few schools which offer formal arboriculture training other than Morrisville in New York, The University of Massachusetts, and Wooster Tech in Ohio. The NAA assists in placement of graduates of these schools and says that there are never enough students to go around. Robert Felix, NAA Executive Secretary, indicated to the State University that The Association would be able to place twenty-five or more graduates every year.



Easy way to loosen heavy clay soil! Works like millions of tiny hoes.™

Sof'n-Soil™ Gypsum works its way down to loosen heavy clay soil so it can breathe. Lets air and water penetrate, boosts efficiency of costly fertilizers. Sof'n-Soil, a natural mineral, stimulates vigorous root systems—promotes growth of grass, trees, shrubs, and flowers. Ecologically safe, Sof'n-Soil *is not lime.* It's neutral, non-caustic, non-burning—harmless to plants, pets, and people. And here's the bonus: Sof'n-Soil supplies essential calcium and sulfate sulfur in readily available form, stimulates decomposition of organic materials, too. Write to us at 101 S. Wacker Dr., Chicago, Ill. 60606. Dept. WTT480.

CHEMICALS DIVISION
UNITED STATES GYPSUM
Primary Supplier of Secondary Plant Nutrients

Write **162** on free information card

Arboriculture *from page 30*

Based on the needs indicated by The Industry, a Steering Committee made up of Farmingdale Faculty and New York Arborists was formed. The committee worked to design a program that would provide the Arboriculture student with the practical, scientific, business and technical training that is required of an arborist initially in starting positions and later on in sales and management.

The four Arboriculture courses offer the following:

Introductory Arboriculture is divided into two parts, the first dealing with Landscape Drafting to enable the student to read landscape construction blueprints and draw plot plans for themselves. The second half of the course is outside and is concerned with the use of arborist tools and techniques such as chain saw maintenance, use and safety; transplanting large trees; preparing hydraulic sprayers for use after winter; dormant spraying; the proper use of the Brush Chipper; fertilizing and spraying.

Arboriculture I involves the principles and techniques of field arboriculture. Students are exposed to the National Safety Standards for Arborists, Shade Tree Pruning, The National Arborist Association Pruning Standards, (CODIT) Compartmentilization of Decay in Trees, some cavity work, bark repair, bracing, cabling, fertilizing, and nonparasitic problems. Lab requirements for Arboriculture I are: 30 hours of tree climbing and pruning large trees and the proper use of ropes and saddles. They are taught where and how to put ropes in a tree, how to get up in the tree, and working ropes to move about. The students get the basics of climbing and climbing safety. The Arboriculture students do all of the tree pruning on the campus of the State University of Farmingdale.

Arboriculture II is split into two parts. The first part of the semester is spent on arboricultural business management: How to write a safety program for a firm, personnel management, how to hire, treating employees, and shade tree evaluation. Business practices and organization includes: management, record-keeping, estimating, customer relations, ethics and standards. Speakers are brought in from both large and small tree companies in addition to NAA Executive Secretary, Robert Felix. Industry representatives explain to the students the problems that they and the industry are facing. The second half of the course is concerned with Municipal Arboriculture/Urban Forestry. They take a look at the problems confronting a Municipal Arborist in planning, design, pruning, and specifications. The students are required to run a Street Tree Inventory on a part of the town of Farmingdale and propose a solution to an existing problem.

Woody Plant Diagnostic Techniques is offered in the last semester and calls for the student to draw upon what he or she has learned in their previous courses. It is assumed, in this course, that the student will end up with a position where he will have to diagnose woody plant problems, such as in sales or with an agency like Cooperative Extension. Students are required to diagnose insect, disease, site and physiological problems. They are taught how to use keys for diagnosing and also the principles of Integrated Pest Management.

A Commercial Pesticide Applicator License is mandatory and the Arboriculture student MUST be licensed by the state of New York or their home state in order to graduate.

Professor Ryan maintains a close contact with the industry by being active in both the Long Island and New York State Arborist Associations and he urges his students to also become involved with these associations and the International Society of Arboriculture. Ryan feels that one must know the industry in order to work with it. He also wants his students to know the practical applications of the industry and not just theory.

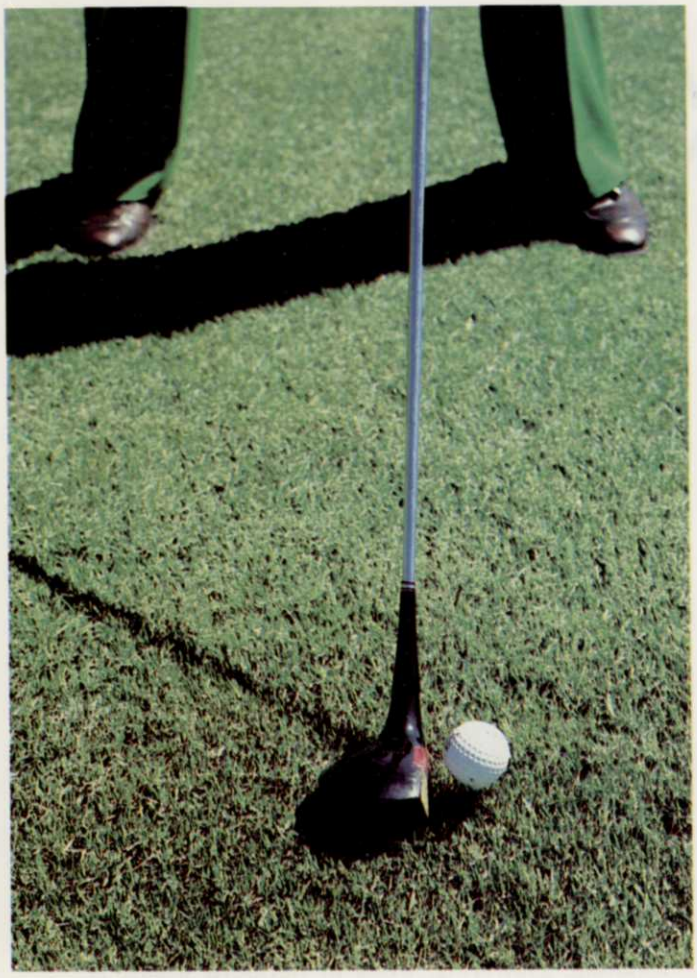
First graduating class

In June, the first class of Arboriculture students will graduate from the State University at Farmingdale. The graduating class consists of twelve students, two women and ten men, who will be looking to gain employment with professional tree services. The class of 1981 expects to graduate nineteen new arborists, three women and sixteen men. Professor Ryan wants to build up the program so that the State University turns out twenty-four students each year for the arboriculture industry.

Continues on page 70

Ornamental Horticulture Program—Arboriculture Option

First Semester	Credits
Soil Science	3
Horticulture I	3
U.S. History	3
Botany	3
English	3
Physical Education	1
	16
Second Semester	
Mycology and Plant Pathology	3
Horticulture II	3
Introductory Arboriculture	3
Entomology	3
Business Math	3
Chemistry	3
	18
Third Semester	
Woody Plants I	3
Arboriculture I	3
Horticulture and Turfgrass Equipment	3
Turfgrass Culture	3
Horticulture Elective	3
	15
Fourth Semester	
Arboriculture II	3
Landscape Construction	3
Woody Plant Diagnostic Techniques	3
Woody Plants II	3
Social Science	3
English	3
	18
Total Credits	67



Citation Turf-Type Perennial Ryegrass

Plant Variety Protection Number 7500003

...you asked for an all-purpose, deep rooted high temperature tolerant ryegrass...

This is our answer!

Dr. William Meyer, Research Director, states: "At Turf-Seed, Inc., we set out to develop a turf-type perennial ryegrass with rapid establishment, good heat tolerance and the ability to maintain high quality throughout the hot summer months. We also wanted an attractive, dark green color and improved mowing performance. After years of cross breeding and testing, Turf-Seed developed Citation. I believe it comes very close to the specifications we were looking for in a fine-leafed ryegrass."

This unretouched photo from California demonstrates an advantage of including 20% Citation with an improved blend of bluegrasses. On the left is 100% Kentucky bluegrass damaged by Fusarium blight. On the right the Citation-bluegrass mixture shows little or no damage.

Citation had the highest average turf performance rating in a five-year test at Rutgers University. This excellent record has been confirmed by years of proven performance in applied use by turf professionals throughout the United States. Top-quality Citation seed is now available for your use.

"PROGRESS FROM THE GROUND UP"

Citation
Turf-Type Perennial Ryegrass

For test results and information write:

Vaughan-Jacklin Corp.
Bound Brook, NJ 08805
Downers Grove, IL 60515
Post Falls, ID 83854
Landover, MD 20785

Jonathan Green & Sons
Farmingdale, NJ 07727

Turf-Seed, Inc.
Hubbard, OR 97032

J & L Adikes, Inc.
Jamaica, NY 11423

ARISTOCRATIC NATIVE PLANTS ARE LOW MAINTENANCE BEAUTIES

By Douglas Chapman, Horticulturist, Dow Gardens, Midland, MI

There are several truly aristocratic native plants which complement many landscape situations. These include dogwood, redbud, shadblow, witch-hazel, and Striped Maple.

Flowering Dogwood *(Cornus florida)* often reaches 20 to 25 feet in height with a sympodial or layered habit of growth. Then in full flower, this tree gives a cloud-like or whispy feeling in the woods. The stems are soft, dark grey when young. The bark is dark "alligatored" at maturity. One can expect flowering 3 out of 10 years in unprotected sites (flower buds hardy to 10 degrees above zero); with almost annual blooming in protected courtyards, near buildings, or when an understory for deep-rooted trees, e.g. oak or pine. The flowers usually develop mid to late May throughout the northeast.

Dogwood prefers acid, organic, well-drained soil. Flowering Dogwood is a good specimen plant in protected areas, good as a border tree, or understory plant in naturalized areas. *Cornus florida* is truly a tree for all seasons, due to its unique habit of growth, flowers, rich green foliage during the summer, and, of course, outstanding fall color. When considering maintenance, one should prune rarely, as closure of the wound is usually slow. Red-Flowering Dogwood *(Cornus florida rubra)* is the most commonly available cultivar. This plant should be used less in more northern areas as its flower buds are less cold temperature hardy.

Pagoda Dogwood *(Cornus alternifolia)* is a native from New Brunswick through Wisconsin and Minnesota. It is a multiple-stemmed shrub or small tree, reaching 20 to 25 feet in height with that sympodial or horizontal-layered habit of growth. The flowers, light yellow in color, are particularly effective for late spring or early summer color. The foliage is a bright yellow-green throughout the summer with some slight fall purpling. In the northern areas, this regal native is compatible in full sun or as an understory plant. It thrives in acid, well-drained soils.

Pagoda Dogwood can be effectively used in borders for home landscapes and park situations. One should consider this an extremely low maintenance plant and not prune. Pruning or simple wounds can result in cankers — the one main problem this exciting plant is killed by.

Kousa Dogwood *(Cornus kousa)*, although not a native, should be looked upon as an exciting understory or specimen plant. It is more upright than Flowering Dogwood, usually reaching 20 to 25 feet in height. When young, it is somewhat vase-shaped, becoming oval at maturity. The stems are usually multi-colored, as the plant gets older, with bark exfoliating. Flowering, even in northern areas, is dependable from late May through mid-June after the leaves are out.. This tree's flowering bracts are pale to clear white. Further, the flower buds are considerably more low temperature hardy than Flowering Dogwood. The cultivar, *Cornus kousa chinensis* 'Milky Way,' is slightly more spreading in

Raspberry-like fruit of the Kousa Dogwood provides a unique addition to the landscape from late August through October. **Yellow, thread-like flowers** of Common Witch-Hazel in October.

habit of growth, with bracts that are more pointed, giving it a delicate, lacier feeling. *Cornus kousa* can be used as a small tree, specimen, or in mass plantings. It seems to thrive in sunnier locations, as contrasted with Flowering Dogwood, tolerating shade. The fruit is effective in late August through October, being one-half to one-inch in diameter. This reddish, globular-shaped fruit, often resembles raspberries. Although seedy, they are usually quite good to eat.

The summer foliage is a good, exciting green with fall color developing extremely late or not at all. The main contrasts between Kousa versus Flowering Dogwood are its ability to thrive in more exposed sites, the upright habit of growth when young, transplants easier, and provides good flower color in late May, while flowering dependably each year later in the season.

Eastern Redbud *(Cercis canadensis)* can be a multiple-stemmed shrub or small tree, reaching 20 to 30 feet in height and width. When young, the plant is somewhat upright, becoming oval at maturity. Young plants have a rich-dark black bark, which becomes rough and reddish at maturity. The heart-shaped leaves are slightly purplish as new growth, becoming rich-dark green for the summer months, with fall color being a clear yellow. Not only is the yellow fall leaf color effective, but the brown pea- or bean-shaped pod adds an interesting contrast to the landscape. The flowers are purplish in bud, contrasting in an exciting way against the black bark, becoming rosy-pink in full bloom. Flowering of redbud is particularly effective, as full bloom occurs in mid to late May before leaf expansion. Redbud requires little pruning; in fact, is very susceptible to wounds. Although closure of the wound often occurs, heartwood decay is a problem even with small wounds.

This plant will take exposed sites as a specimen or integrates well in a shrub or tree border. In fact, redbud thrives when the root system is shaded or cooled by non-competitive shrubs. It grows best in rich, deep, loamy, well-drained soils. The cultivar, White-Flowering American Redbud *(Cercis canadensis 'alba')*, has an almost identical habit of growth, flowering period, and general response, as does the species with one exciting difference — the flower color. Although there are several other cultivars available, confusion in the trade renders seedlings a better value.

Shadblow *(Amelanchier canadensis)* is another regal native. This gray, multiple-stemmed shrub or small tree is a herald of spring. The good, clear, white flowers, contrasted by the silver-green foliage in late April or early May, make this an outstanding plant in native plantings, as understory, or a specimen shrub. Shadblow vary from 8 to 20 feet in height, usually being somewhat vase-shaped. The summer foliage is a clear, rich-dark green, contrasted when young against gray bark and when old against black and gray-striped bark. In the fall, shadblow's oval-shaped leaves range in color from scarlet to yellow, literally painting much of our woodland landscape. This plant rarely requires pruning and should be considered outstanding in low maintenance areas.

Common Witch-Hazel *(Hamamelis virginiana)* is usually a multiple-stemmed shrub that reaches 25 feet in height, but can be trained into a small tree. The yellow, thread-like flowers are an exciting addition to the fall landscape (October). Individual branches are often horizontal, giving the illusion of a Flowering Dogwood branch. The dark gray stem accents the clear yellow-brown fall color which helps this understory plant "light-up" the landscape. It is a good border or specimen understory plant for naturalized areas in large home or park landscapes. Witch-hazel thrives in sandy, yet poorly drained soils. It isn't host for a major insect or disease. Common Witch-Hazel is a hardy, low maintenance pest-free plant.

Striped Maple *(Acer pensylvanicum)*, a native of southern Canada and northern United States, is an exciting understory plant. Its large red buds open to showy yellow-green flowers, making this an outstanding native. This small tree is somewhat open yet rounded in habit. The summer leaves are a sparkling yellow-green. Striped Maple is rarely affected by insects and diseases, while being somewhat drought tolerant. Fall color has been noted on some plants but rarely develops. Its green and white-striped bark can be a unique addition to the winter landscape. This low maintenance, relatively insect and disease-free small tree, is an outstanding addition to naturalized areas but is rarely available in the trade.

These aristocratic or regal natives should be considered for low maintenance areas. They require little or no pruning, are perfectly hardy, yet in most instances, grow extensively throughout the northeastern and central U.S. These plants add exciting spring color to the landscape. Shadblow, Flowering Dogwood head the list, with Redbud, Pagoda Dogwood, Kousa Dogwood, Striped Maple, and Common Witch-Hazel soon following. These plants are good as understory or mass border plantings, with Redbud, Flowering Dogwood, and Kousa Dogwood, outstanding as specimen trees when planted in protected sites. They are unique in that damage by lawn mower or pruning shears is slow to heal; therefore, wounding, in general, should be minimized or heartwood rot will be a problem. Transplanting is relatively successful for Amelanchier, Pagoda Dogwood, Kousa Dogwood, with Flowering Dogwood being more difficult, and Eastern Redbud, Striped Maple, and witch-hazel being most difficult. Once established in the landscape, few insects or diseases affect these truly regal plants. **WTT**

THE
QUALITY
NITROGEN
NITROFORM
™

NITROFORM® IS THE LONGEST FEEDING HIGH ANALYSIS ORGANIC NITROGEN.

Longest feeding is important when it's your job to keep the turf looking good all year. Especially now with the high costs for turf care.

Longest feeding means you can worry less. Repeat applications are narrowed down. You save energy, labor bills and headaches. While your turf stays healthy and green. Also good for trees and shrubs. Nitroform from Boots Hercules is the standard of quality by which all other nitrogens are measured. It feeds naturally as your plants need it, balancing the feeding between roots and top growth.

Non-burning. Non-leaching. Odorless. Ideal for seed beds. Blue Chip® for dry application. Powder Blue™ for liquid application.

If your fertilizer isn't lasting long enough, it doesn't contain Nitroform.

BOOTS HERCULES

BOOTS HERCULES
AGROCHEMICALS CO.
WILMINGTON, DELAWARE 19803
302/575-7850

CONTRACTORS TRIM INVENTORIES BUT PLAN FOR STEADY GROWTH

By Bruce F. Shank, Editor

Landscape contractors are very alert to inflation, are keeping inventories down, and fully expect to increase sales this year according to the latest poll by the Research Department of Harvest Business Publications.

Their reaction to economic conditions appears to be one of cautious optimism due to the knowledge gained during the 1974 recession, the fact that construction contracts are still strong, and the expectation that the demand for improved residential and commercial landscapes will rise as energy costs restrict man's travel and force him to bring nature into his surroundings rather than traveling to it.

Inflation tops government regulations in importance according to more than 150 contractors polled. Realizing that inflation nearing 20 percent is likely for this year, contractors are planning for sales growth from 10 to 30 percent to stay even in real dollars.

Other areas of concern are quality of labor, liability insurance rates, and labor supply. Fly-by-niters follow these other concerns.

Buying in the fourth quarter of last year showed no large falloff. The percentage of respondents buying in the quarter was typical of any normal year for chemicals and seed, and off slightly for equipment. The average value of purchases for chemicals was down slightly, indicating conservative buying to keep inventories in check. Purchase of irrigation equipment held strong in both percentage buying and average purchase. No dramatic drop in mowing equipment or tractors was indicated by the respondents.

Comparing our research from last winter, the fourth quarter was considerably better than the first quarter. We hope to have data on the first quarter of 1980 by the June issue, and perhaps some general observations by May.

Interest in leasing equipment is obvious at the many regional and national shows we attended this fall and winter. Manufacturers have remained relatively quiet on the subject of leasing and only a few regional distributors are actively seeking leas-

Continues on page 40

ONE . . . MAN . . . MACHINE

PARSONS SABER PLOWS GET THE JOB DONE QUICKER

When you lay cable, you need a Parsons Saber Plow. Fast. Easy-to-operate. Cost efficient. Load, carry reels, direct feed into blade, neatly cut a slot with vibratory action and restore soil . . . ALL IN ONE PASS. One man. One machine. Parsons plow make your bid profitable.

Also available is our plow/trencher combination T-450 and our Parsons 75. Exclusive dealer territory available now!

A Parsons model for every job:

- Model DP 600 . . . 80 HP, plow to 1.3 MPH fully hydraulic, 2-speed transmission 30 in. of cover
- Model DP 900 . . . 95 HP, plow to 1.3 MPH fully hydraulic, 2-speed transmission 36 in. of cover
- Model DP 1800 . . . 175 HP, plow to 1.3 MPH fully hydraulic, 4-speed transmission 36 in. of cover

Seaman Company
A unit of Stowell Industries
Box 25331, Milwaukee, WI 53225 414/781-8900 TWX: 910-262-1188

2003

Write **145** on free information card

PURR-FECT PRIDE

When you use a Bob Cat Rider —48, —61 or —74 to mow with, you'll understand why your fellow professionals have *Purr-fect Pride.* Here are riding mowers geared to produce the *perfection* you look for.

Now is the time for you to look at the best . . . a Bob Cat.

Get The Best... Get A BOB-CAT

WISCONSIN MARINE, INC.
1 Bob-Cat Lane,
Johnson Creek, WI 53038 [414] 699-2000

Write **138** on free information card

Atrinal®

Systemic Plant Growth Regulator

DISTRIBUTORS

Agrotec, Inc.
Salisbury, MD
(301) 749-8496

Joe Berger & Co.
Renton, WA
(206) 235-4510

Cassco
Montgomery, AL
(205) 272-2140

E. C. Geiger
Harleysville, PA
(215) 256-6511

Growers International
Houston, TX
(713) 667-2405

A. H. Hummert Seed Co.
St. Louis, MO
(314) 771-0646

Moyer Chemical Company
San Jose, CA
(408) 297-8088
Santa Ana, CA
(714) 549-2871

Oregon Horticultural Supply Co.
Portland, OR
(503) 232-7138

Regal Chemical Company
Atlanta, GA
(404) 475-4837
Knoxville, TN
(615) 577-5443

Southern Agricultural Insecticides, Inc.
Palmetto, FL
(813) 722-3285
Hendersonville, NC
(704) 692-2233

Target Chemical Company
Cerritos, CA
(213) 865-9541
(714) 821-9020
Fresno, CA
(209) 291-7740
Phoenix, AZ
(602) 272-6867
San Jose, CA
(408) 293-6032

Thornton & Wilson, Inc.
Maineville, OH
(513) 683-2141

Turf Products Ltd.
West Chicago, IL
(312) 668-5537

Contact one of these Atrinal distributors or write–

ROCHE **Maag Agrochemicals Marketing**
Hoffmann-La Roche Inc.
Nutley, N.J. 07110

Systemic spray reduces trimming on hedges, shrubs and ground covers!

Maag®

Atrinal®

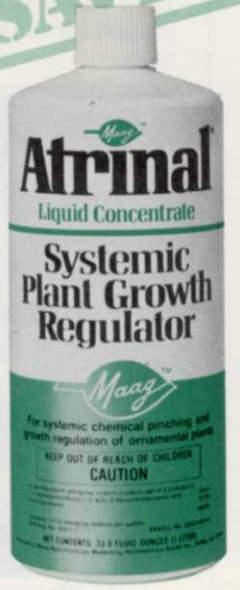
Spray with Atrinal and you'll reduce trimming time and labor...and in landscaping, time is money!

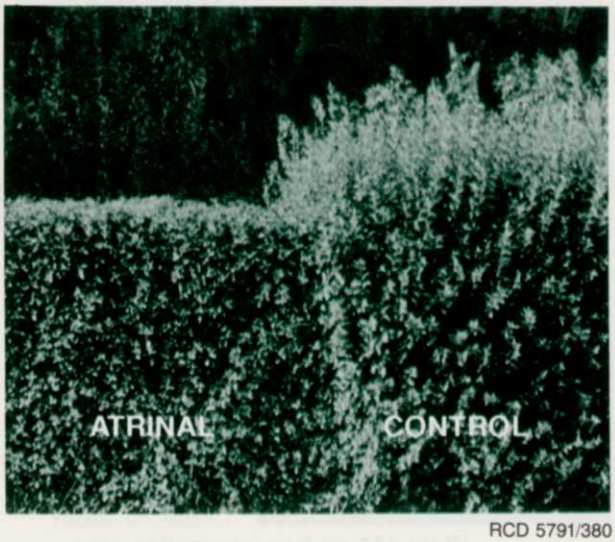
Spray Atrinal on hedges, shrubs and ground covers and they will require less trimming and pruning and have a more compact shape. Atrinal can also be used to remove unwanted blooms and prevent fruit set on certain species. And spraying is faster and easier.

Trust Atrinal. Use it, then watch time-and-labor savings add up! Get all the facts. See your distributor or write–

ROCHE Maag Agrochemicals Marketing,
Hoffmann-La Roche Inc.
Nutley, N.J. 07110.

THE LABOR SAVER



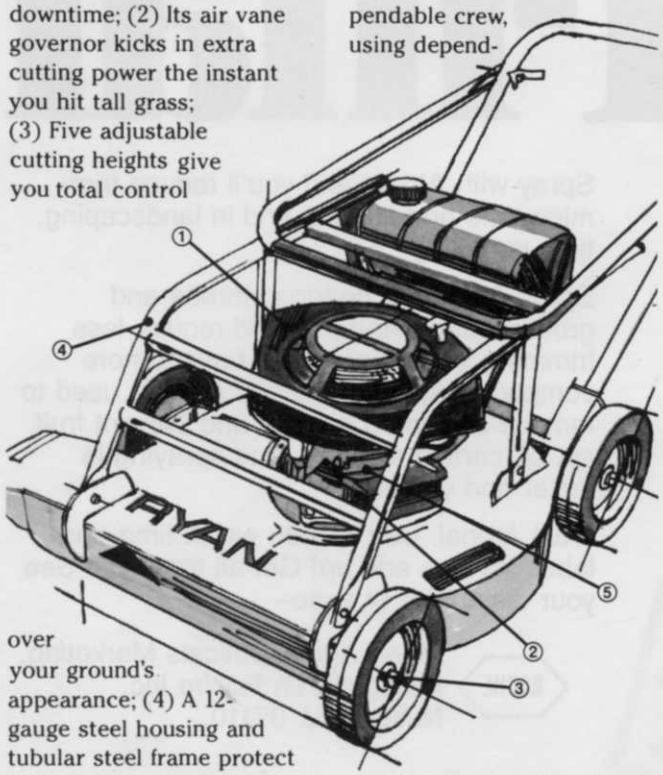


RCD 5791/380

There just isn't another mower built like Ryan's.

After just a year in the field, the Ryan Commercial Mower has attracted a lot of attention. It just may be the toughest high-performance mower you've ever seen. Here's why.

(1) Its simple 2-cycle engine has fewer moving parts, so you get a longer life cycle of power with less downtime; (2) Its air vane governor kicks in extra cutting power the instant you hit tall grass; (3) Five adjustable cutting heights give you total control over your ground's appearance; (4) A 12-gauge steel housing and tubular steel frame protect the engine as you cut around shrubs and fence; (5) There's a fuel-efficient fixed-jet carburetor.



And Ryan's modular parts replacement system helps you save on repairs. Instead of rebuilding the engine parts you can replace the entire component. Economically. And fast.

With operating costs getting higher all the time, you need to get the most out of every hour's wage you pay. That takes a dependable crew, using dependable equipment. Like the Ryan Commercial Mower.

Ask your Ryan dealer for a demonstration, and see for yourself how we build a mower. 80-CUR-3

The Commercial Mower

RYAN®
TURF-CARE EQUIPMENT

Day-In, Day-Out Performance.

3031 Cushman
P.O. Box 82409
Lincoln, NE 68501

Write **134** on free information card

Contractors *from page 38*

ing business. Part of the reason for this may be Green Industry equipment makers have never built up large inventories.

One area which may not be as evident as purchasing, but is as critical, is personnel. Contractors are deeply concerned over the quality and cost of employees. Unemployment, health and liability insurance have risen in cost rapidly. The cost of fringes takes away from the more psychologically important salary increase. It becomes impossible to keep employee salaries even with inflation and still pay fringes required by law. Customers can't be expected to absorb annual price increases large enough to offset both fringe and salary cost increases. Therefore, reducing the number of employees is unavoidable unless growth in business and productivity make up the loss.

The well-trained candidate for employment offers many advantages providing his or her character includes the senses of responsibility, accomplishment and ambition. An education doesn't guarantee these. Check with school counselors for these vital traits about applicants.

If these traits are present, the jobs they perform are generally more creative, more precise, less likely to require a return trip, and more likely to impress the customer.

Contact state extension personnel for the location of schools with programs relating to landscape contracting and design.

One thing is for certain, if an employee is marginal or only half reliable, a plan to replace him with a more responsible individual should be initiated immediately. You may be able to carry him in normal years, but factors make charity less affordable today. And if he is capable, ambitious, and caring you should pay for his training to make him fully productive.

Personnel are as critical an economic factor as excessive inventories, high interest rates, or taxes.

To date, landscape contractors seem to be doing the right thing at the right time. They are cautious, but still concentrating on new business. Their buying will be less seasonal and more according to job. They have learned from the past and will be around for the next recession, and the next, and the next. **WTT**

Write **108** on free information card

Here's some good news!

See your Case trencher dealer for a great deal on a 25+4...NOW!

Right now the Case Light Equipment Division and your Case trencher dealer are geared up to offer you what just may turn out to be the best deal you'll ever make on a trenching machine.

The versatile Case 25+4 trencher is the compact ride-on trencher that gives you more digging per dollar than any other trencher in its class.

With a tough 16.8 kW (22.5 hp) engine, hydrostatic drive, articulation, and an over-center digging chain clutch, the 25+4 gives you big-trencher features for a small-trencher price. And it trenches all the way down to 1676 mm (66") deep.

A stout backhoe option like the Case construction-quality D70 backhoe adds even more versatility. Other options include a 40° hydraulic angle blade, and a 22,680 kg (50,000 lb) test digging chain.

Case 25+4 trencher...see it soon at a Case trencher dealer near you. It just may turn out to be the best deal you'll ever make on a trenching machine. And it's all backed-up by top-notch parts and service, too. Come and get it...the versatile Case 25+4.

Trenchers by Case!

After 11 years of Case/Davis, the only change is in the name. And that's a very good sign!

J I Case
A Tenneco Company

TENNECO

Light Equipment Division
PO Box 9228 Wichita, KS 67277 U.S.A.

VL-1-280

doing something about it.

case

Write **118** on free information card

WE SPENT 14 YEARS BUILDING THE WORLD'S FINEST TREE SPADES.

Serious about moving or harvesting trees? Check around. Talk to the people who own and operate tree movers every day . . . the companies who depend on them to turn a profit. When you do, you'll find **they own more Vermeer Tree Spades than all other competitive machines combined.** The reason? Vermeer performance. In sandy soils. In hard clay. Day after day, year after year. In virtually every soil condition around. With virtually every variety of tree or shrub imaginable.

YOU CAN DIG IT WITH VERMEER

Compare Vermeer features: the superior, heavy-gauge steel channel frame; high-tensile steel spades; the patented, hydraulically-controlled, 4-spade design; straight-angle penetration for smoother digging, less ground resistance; the extra options and spade selections that save you time and labor. Features that make a big difference in profits.

But most important, look at Vermeer experience. Over 14 years. Testing. Improving. Servicing. Building the world's finest and most complete line.

Want more information? Fill out the instant-action coupon. The Diggin' Dutchman will send you information on all five Vermeer Tree Spade models within 48 hours. For immediate help, see your nearest Vermeer dealer. **Or, call Toll-Free (800) 247-2347. In Iowa, call collect at (515) 628-3333.**

Please send complete information on:

- ☐ Vermeer Tree Spades
- ☐ Vermeer Stump Cutters
- ☐ Vermeer Brush Chippers
- ☐ Vermeer Log Splitters

NAME _____

COMPANY _____

ADDRESS _____

CITY _____

STATE _____ ZIP _____

PHONE _____

Vermeer THE DIGGIN' DUTCHMAN

8804 New Sharon Road
Pella, Iowa 50219

Write **104** on free information card

KEYS TO PROFESSIONAL ANNUAL DISPLAYS

SELECT, INSTALL AND MAINTAIN TO PRESERVE DESIGN IMPACT

By Richard Esmark King, Holliston, MA

Annuals are becoming more and more important in the groundskeeping industry. Industrial parks with limited outdoor space can use them to add color to the perimeter efficiently. If they have more space, they can work the annuals into patterns that are very eye catching.

Annuals are a disposable flower. Every year you can create a completely new garden with them. Every year you can develop a whole new motif. For instance, in 1976, gardeners all over the United States created designs that resembled flags, or banners. Red, white, and blue flowers were worked into many different designs, and some gardeners developed some very unique patterns.

Unlike the perennials, the annual flowers constantly all season. Of all our plants annuals have the greatest potential for a one hundred percent display of color. And there are annuals for virtually every color of the visible light spectrum. Some of the annuals have colors which are actually beyond our senses, but are visible to bees and butterflies.

A good annual bed can be made in almost any sunny location. A shaded area is going to limit the number of annuals you will be able to work with as most of them flower best in the bright sun.

Golden Celosia withstands full sun and wind and is an annual recommended for exposed locations. (Photo by T.A. Fretz)

Designs

You will find yourself working with three basic types of designs. The simplest is the zonal design, where your colors are clearly limited to specific areas of the bed. This may be a yellow marigold rectangle within a larger blue ageratum rectangle. Or it could be broad bands of flowers next to each other. For instance bands of red, white, and blue were often used in 1976.

The second, somewhat more advanced design, is linear. For this your background is a solid color and you draw your design in with lines of flowers. An example of this would be a background of red begonias with lines of white begonias. Or you could use a background of bronze coleus with an outline of green coleous.

The third, and by far the most complex pattern to work with is the combination of zonal and linear designs. In this you would have the color zones with linear drawings cutting through them. This last type of design takes careful planning on paper and a lot of attention to accuracy when planting. But if it is done right it can be very stunning.

Breaking designs down into area or line patterns can be done in most visual arts. You can see it in modern painting or renaissance architecture. The aesthitics involved are the same for you as for them and you will find that as you think in terms of area and line the pattern you make will be very artistic.

Setting

Look at your planting space in relation to it's surroundings, and try to see any factors that are going to influence the designs. In some cases the way the beds are situated will make a difference in their viewing. In one park where I was the head gardener we had raised annual beds set in concrete forms. The first year we planted the beds with flowers of about the same height. They all grew well but the flowers on the outside blocked the view to those on the inside. By midsummer the pattern was lost to anyone walking near the beds. The second year we used a little more height in the center of the flower beds.

Height is a very important factor in planning your designs. You have two methods to choose from when varying the height within the bed. First you can use flowers of the same height and simply raise the soil level where you want additional height. The major drawback with this is that in time erosion may alter the soil contour. If you pack the soil firmly, and the flowers are planted relatively close together, the hills and valleys you create will probably last the season. However, if there is an excess of rain, or the soil is loosely packed, you may find your display sagging or becoming distorted.

Continues on page 46

LESCO brings you the best.
Quality fertilizer and chemicals and now CBS LESCO Blend Grass Seed.

LESCO welcomes CBS Grass Seed to our family of fine products. We're proud to bring you this quality ryegrass and we're convinced you'll be proud, too. You'll be proud of your lawns, fairways and greens seeded with CBS.

Phil Gardner, LESCO's Florida Regional Manager, knows the seeding needs of golf course superintendents and grounds maintenance specialists in the South and the North. After seeing the results of overseeding and new seeding with CBS, Phil says CBS will sell itself. He's seen the results; he's seen the test plots; he's seen the research.

See for yourself what CBS LESCO Blend can do. Call toll-free for this superior grass seed blend and all the other quality LESCO Products. LESCO 100% Sulfur-Coated Fertilizers.

LESCO PRODUCTS

Division of Lakeshore Equipment & Supply Co.
300 South Abbe Road, Elyria, Ohio 44035
(216) 323-7544

(800)321-5325 NATIONWIDE
(800)362-7413 IN OHIO
(216)323-7544 CALL COLLECT

A Family of Fine Products: Lescosan 12.5G—Lescorene—Lesco 4—Lescobor—Lescopar—Lescopex—Lesco Non-Selective Herbicide—Lesco MSMA—Lesco Thiram 75W—Lescozyme—Lakeshore Chinch Bug & Sod Webworm Control.

Design Impact *from page 44*

The second way to vary the height is to leave the soil level and choose plants which grow at varying heights. There are also drawbacks to this course of action. Most of these problems however, result from mistakes in plant care. For instance, if the initial fertilizing of the soil prior to planting is done unevenly you will have some plants shooting up taller than others in the same line. The same effect may also develop from uneven spread of lime.

You will almost always want the highest point to be at the back or the middle of the bed. If the bed is going to be seen from only one side you can have it sloping upwards from the front, the highest point being the back. If the bed is to be viewed from all sides, you obviously will have to slant it upwards from all angles toward the middle. Rarely will this vary. When the bed is viewed from above, the the bed can have a slight slope downwards toward the center. That is, the bed could be made concave rather than convex. This situation does not develop often. The obvious problem with a concave planting is that if the drainage is not adequate than a pool will develop at the bottom.

Symmetry

Now that we've considered the surrounding factors, let's look at the shape of the bed itself. The shape of the bed is going to be the first governing factor in your design. If the bed is symmetrical you may find it much simpler to work with. For example you can do a lot more with a square bed than one shaped like a horse shoe. If the asymmetrical bed is not extreme you may be able to fill in some of the odd corners with foliage plants or neutral colored flowers and create a symmetric shape within their borders in which you can develop a design.

On paper

Drawing the design out on paper is no problem when you are using a square or rectangular bed. Use graph paper and designate each little square as a space six inches by six inches square. This represents one plant. An eight by eight foot bed would be a square of graph paper sixteen spaces by sixteen spaces. Draw in your pattern and you have an accurate count of flowers. This works well only with the straight designs. Other than this try to keep to scale, using six inches as the space for each plant. By the way, most begonia sized plants spread easily to fill a space that size.

If you are new at annual beds stick to straight lines as opposed to curves and circles. They are easier to plan and plant. You can build squares within squares, or employ triangles. Remember to think ahead to what the beds are going to look like. Think in terms of line and area.

Continues on page 48

Begonia semperflorens (photo courtesy Agricultural Technical Institute, Wooster, OH).

Gazania (ATI)

Hemerocallis 'Bicolor' (ATI)

Achillea (ATI)

It takes a tough grass seed to shake off the harsh effects of salt.

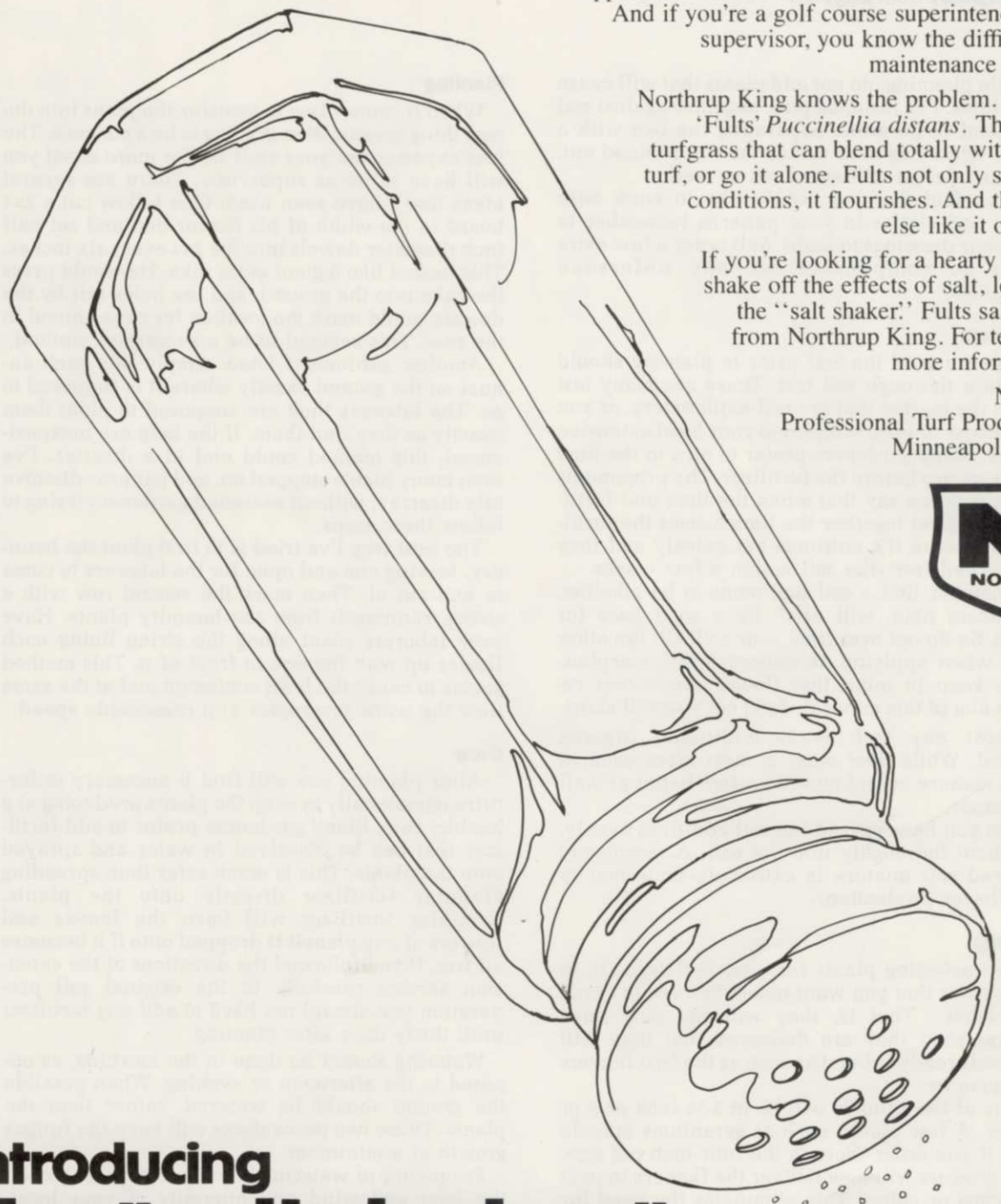
Road maintenance engineers deal with heavy salt applications from the Rockies to the Eastern seaboard. And if you're a golf course superintendent or a park supervisor, you know the difficulties of turf maintenance in saline soil.

Northrup King knows the problem. Our solution? 'Fults' *Puccinellia distans*. The salt-tolerant turfgrass that can blend totally with surrounding turf, or go it alone. Fults not only survives saline conditions, it flourishes. And there's nothing else like it on the market.

If you're looking for a hearty grass that can shake off the effects of salt, let us pass you the "salt shaker." Fults salt-tolerant turf from Northrup King. For test results and more information, write:

Northrup King
Professional Turf Products Division
Minneapolis, MN 55440

NK NORTHRUP KING



Introducing the "salt shaker."

Fults - the salt-tolerant turf.

Design Impact *from page 46*

While planning, do not add plants that will cause weak lines. For instance pink begonias against red ones tend to be mute. Separating the two with a row of white begonias makes the colors stand out, and your design will stand out as well.

If you feel that you would like to work with curves and circles in your patterns remember to keep your drawings to scale. And order a few extra plants to compensate for any unforseen difficulties.

Soil Prep

Preparation of the soil prior to planting should include a thorough soil test. There are many test kits on the market that are self-explanatory, or you may choose to send samples to your local extension service. Many gardeners prefer to turn in the lime a week or two before the fertilizer. The proponents of this practice say that when the lime and fertilizer are added together the lime causes the fertilizer to release it's nutrients too quickly and they are leached from the soil within a few weeks.

Remember that a soil that tends to be alkaline, has excess lime, will often be a good base for weeds. So do not over lime your soil. On the other hand, when applying phosphorous or superphosphate, keep in mind that flower production requires alot of this mineral, don't cut yourself short.

Almost any soil needs additional organic material. While peat moss is most often used in parks, manure or leaf mould is often better as well as cheaper.

Once you have spread the soil additives evenly, turn them thoroughly into the soil. A thoroughly prepared soil mixture is extremely important to your flower production.

Ordering

When selecting plants for your beds specify to your grower that you want plants that are in, "bud and bloom". That is, they will not only have flowers when they are delivered, but they will have buds ready to burst as soon as the first flowers have gone by.

Many of the annuals will be in 3-½ inch pots or smaller. A few plants, such as geraniums may do better if you order them in the four inch pot size. Many growers will now deliver the flowers in peat moss cups or cubes. This eliminates the need for the flower pots which many of us have become accustomed.

Most plants that look unhealthy are unhealthy. Don't accept them. The most important part of your annual bed's appearance depends on how healthy your plants are.

Even the most experienced groundskeeper run into snags during the growing season. An animal running through your flower bed in July, a dog burying a bone in your display during August, will destroy plants. In the later part of the season it will be almost impossible to locate a source of plants that will be the same type, variety, and color as the others in your flower bed. So buy extras, and plant them where they will have about the same amount of sun as the main bed. Then if you need some extras later you will have them.

Planting

When it comes time to transfer the plans into the real thing organization is going to be a concern. The less experienced your staff is, the more exact you will have to be as supervisor. There are several ideas that I have seen used. One fellow cut a 2x4 board to the width of his flower bed and set half inch diameter dowels into the 2x4 every six inches. This looked like a giant grass rake. He would press the rake into the ground, and the holes left by the dowels would mark the location for each annual in the row. This seemed to be a successful method.

Another gardener I know simply sets each annual on the ground exactly where it is supposed to go. The laborers then are supposed to plant them exactly as they find them. If the help are inexperienced, this method could end in a disaster. I've seen many plants stepped on, and patterns dissolve into disarray, without seasoned gardeners trying to follow these steps.

The best way I've tried is to first plant the boundry, leaving one end open for the laborers to come in and out of. Then mark the second row with a string, running it from the boundry plants. Have your laborers plant along the string lining each flower up with the one in front of it. This method seems to cause the least confusion and at the same time the work progresses at a reasonable speed.

Care

After planting you will find it necessary to fertilize occasionally to keep the plants producing at a healthy rate. Many gardeners prefer to add fertilizer that can be dissolved in water and sprayed onto the plants. This is much safer than spreading granular fertilizer directly onto the plants. Granular fertilizer will burn the leaves and flowers of any plant it is dropped onto if it becomes all wet. If you followed the directions of the extension service carefully in the original soil preparation you should not have to add any fertilizer until thirty days after planting.

Watering should be done in the morning, as opposed to the afternoon or evening. When possible the ground should be watered, rather than the plants. These two precautions will keep the fungus growth at a minimum.

Frequency of watering is going to depend alot on the heat and wind and humidity of your local. Generally let the bed become dry on the surface, but not underneath, before you water.

Pinching back a few stems on each plant will cause the plant to grow in fuller. What happens is that the buds near the break each send out new shoots. Often as many as four at each break. Thus where you had one stem before pinching you will have several afterwards. Care should be taken that you do not take too much off a plant on each pinch. This would make it look "scalped". Also individual leaves and blossoms should be pinched off after they have passed their prime.

Annual beds can be colorful and full. They can add a unique touch to a shopping mall or park. With a little experimenting your designs can be extremely creative supplements to the total effect of your landscape. **WTT**

The New 1810...

Ditch Witch meets you halfway.

Looking for a trencher that's a bit more than a handlebar machine, but not quite as much as our 2200 riding unit? Now you can stop searching...the Ditch Witch 1810 meets you halfway.

This little 18-HP-class trencher has a unique design which locks all four wheels into equal drive at the push of a pedal. Ground drive is hydrostatic... same as our big R100 model. A pedal-engaged master clutch permits quick cold-engine starts and will disengage all functions.

The 1810's all-in-one, single gear box design houses the differential, hydraulic pump drive and transmission. It's also the hydraulic reservoir... a one-location time saver when it comes to routine hydraulic checks and regular maintenance.

Pre-set and self-adjusting belt tension, speed feathering control, hefty 20,000-pound-test digging chain... all these features and more. And in a cost versus payback challenge, the 1810 offers the labor and time-saving returns of many larger, higher-priced machines.

Contact your Ditch Witch dealer for a free demonstration. Call Toll Free (800) 654-6481 or write for more details.

Write **129** on free information card

Sounds like a big little trencher... tell me more! 4-80/WT&T

Check one or both:

- ☐ Please send me information on the 1810.
- ☐ Arrange for a free, no-obligation demonstration.

Name: _____

Company: _____

Address: _____ Phone A/C: _____

City: _____ State: _____ Zip: _____

CLIP AND MAIL TO:

Charles Machine Works, Inc.
P.O. Box 66
Perry, Oklahoma 73077

DITCH WITCH

DITCH WITCH IS THE ANSWER!

Ditch Witch and DITCH WITCH are registered trademarks of the Charles Machine Works, Inc.

Toro has a sprinkler for

playing fields that's out of sight.

People run across lots of different sprinklers in the parks, playgrounds and stadiums of America. One is made so they don't run an extra risk while doing it. The TORO 640 pop-up head.

When a Toro automatic system is installed on your field, the 640 pop-up heads are buried below turf level. They pop up during watering. Then disappear out of sight. And out of the way.

We designed this head of rugged, non-corrosive plastic and stainless steel. And its exposed surface area is minimized. In fact, conventional sprinklers measure up to seven times the exposed surface area of the TORO 640.

Anyone responsible for a field knows only too well that vandals find it hard to resist sprinklers. Which is another reason why we made the TORO 640 hard to find. And even harder to damage. It's built so tough that we can

back it with a seven year limited warranty. Features like a gear drive permanently sealed in oil and a stainless steel riser help it stand up to years of use and abuse.

The TORO 640 is part of a fully automatic system that can be programmed to water at times that are best for growing a healthy playing surface. That's usually at night, when no players are around.

So if you're interested in both improved safety and more playable turf, you're on solid ground when you install Toro automatic irrigation. Call our Larry Hagen on his 24-hour number, (714) 359-0700, for information on a Toro system with 640 pop-up heads. They're out of sight.

The Toro Company, Irrigation Division, P.O. Box 489, Riverside, CA 92502. International Telex: 676-490.

Write **117** on free information card

TORO®

IRRIGATION DIVISION

©The Toro Company 1979

EXPOSED LOCATIONS REQUIRE HARDIER VARIETIES

By Gary A. Anderson, Chairman, Horticultural Industries Technologies Div., Agricultural Technical Institute, Ohio State University, Wooster, OH

The groundskeeper who desires to brighten the landscape with flowering plants often finds areas exposed to full sun and drying winds a special challenge. Newly constructed residential and public building sites are often without protection and shade. Bright sun and windy conditions work together to lower humidity around the plants and increase water loss from them. Windy conditions cause mechanical damage to delicate flower petals and foliage. However, selection and conditioning of annual and perennial plants can provide color for even these apparently harsh locations.

Planting in exposed locations

Select dwarf varieties which generally withstand windy conditions better than taller varieties of the same species.

Set out larger, more developed plants that have been grown in large cell packs or singly. Smaller plants may dry out before they become established.

Avoid setting out spindling plants that will be slow to establish and which may suffer from mechanical damage due to wind.

Condition plants to outside environment before planting. Withhold water to firm plant tissue and prepare for water stress conditions.

A number of annual and perennial plants will perform well in windy and dry conditions. One of the most tolerant plants for bedding work is *Vinca* or Periwinkle. The glossy green foliage grows eight to 16 in. tall and fills in rapidly. Five-petalled pink, white, or rose blossoms are produced throughout the summer and fall, even when temperatures become very hot.

Wax begonias are colorful, compact plants that withstand windy conditions well. Bright sun may cause some damage to the foliage but this is often covered with a profusion of red, white or pink blossoms and is therefore not conspicuous. There is very little maintenance with the plant and few insects and diseases attack it.

Gazanias grow well in hot, windy places. The brightly colored daisy-like flowers have distinctive dark around the center. Flowers rise six to 12 inches above the ground. Blossoms close in cloudy weather and at night.

Perennials

Perennials bloom over a shorter period of time than annuals, but once established, will persist for many years. *Asclepias* or butterfly weed is a showy, brilliant orange perennial that will tolerate dry windy locations and poor, dry soil. It has almost no insect or disease problems and once established requires little attention. The plant is two to three feet tall and blooms for about two weeks in midsummer. Another plant that sports a bright orange cluster of flowers two to three feet above the ground is Maltese Cross *(Lychnis).* Strong stems support flowers even during driving rains.

Achillea or yarrow will withstand drought in open, sunny locations. The flat golden heads are produced in midsummer, even if the plants are neglected. Wind passes through the fern-like foliage with little effect on the plant.

Other annuals and perennials listed in the chart have characteristics that make them good candidates for exposed planting. Nursery or seed catalogs and gardening books should be used to check out heights, blooming times and colors. When purchasing plants or seeds, pay attention to the attributes of the particular cultivar to make sure it is what you think you are getting. The introduction of many dwarf cultivars on the market has increased the choice of flowering plants for exposed locations. **WTT**

Plants Suitable for Exposed Locations

Annuals	Perennials
Arctotis (African Daisy)	*Achillea* (Yarrow)
Begonia (Wax Begonia)	*Armeria* (Sea-Pink)
Catharanthus (Vinca or Periwinkle)	*Artemisia*
Celosia	*Asclepias* (Butterfly Weed)
Coreopsis (Calliopsis)	*Aster* (Michaelmas Daisy)
Dimorphotheca (Cape Marigold)	*Coreopsis*
Eschscholzia (California Poppy)	*Echinops* (Globe Thistle)
Gaillardia	*Gaillardia*
Gazania	*Hemerocallis* (Day Lily)
Gomphrena (Globe Amaranth)	*Kniphofia* (Red-Hot-Poker)
Helichrysum (Strawflower)	*Liatris* (Gayfeather)
Mesembryanthemum (Livingston Daisy)	*Lychnis* (Maltese Cross)
Pelargonium (Geranium)	*Monarda* (Beebalm)
Portulacca (Moss Rose)	*Physostegia* (False Dragonhead)
Sanvitalia (Creeping Zinnia)	*Rudbeckia*
Tagetes (French Marigold)	*Sedum*
Verbena	*Veronica*

When Dave Portz renovated 14 fairways with Roundup®, the members played the same day he sprayed.

Dave Portz
Grounds Superintendent
Brookside Country Club
Mecungie, Pa.

Cleaning up a weedy fairway doesn't have to be a slow, messy job for you—or a hardship for your golfers.

Roundup® herbicide helps make renovation fast and efficient—as Grounds Superintendent Dave Portz discovered last year.

"If we had chosen to plow the course under, we would've had to close it," Dave says. Instead, he applied Roundup on 14 weedy fairways, and reopened the course the same day. While Roundup worked, the members played over the dying turf, with no problems.

The members—and Dave—liked that. They were glad, too, that Roundup won't wash, leach or volatilize to injure desirable plants along the fairway. Dave simply took precautions against spray drift.

This year, reach for Roundup to control many tough weeds. It can make turf renovation fast and efficient for you—and leave a lot more playing time for your golfers.

There's never been a herbicide like this before.

ALWAYS READ AND FOLLOW LABEL FOR ROUNDUP. RI-8004 D
Roundup® is a registered trademark of Monsanto Co. © Monsanto Company 1980

For the turf you care for: proven protection against nine damaging diseases from America's leading fungicide for turf. Now a 500 gram per liter flowable formulation.

Daconil 2787

Daconil 2787 is the broad-spectrum fungicide that helps you fight such problems as dollar spot, gray leaf spot, large brown patch and red thread. Easy to handle with great flowability. Disperses quickly in the spray tank. Effective even in hot weather. Daconil 2787 also provides effective disease control on a number of ornamentals. Now in a new 500 g/l formulation.

Diamond Shamrock gives you all the help you need for weed problems, too.

Dacthal® is the preemergence herbicide that controls more than 20 weeds and unwanted grasses. Stops early and late germinating weeds without affecting healthy, growing turf grasses. Tough weeds like crabgrass and Poa annua can't stand up to Dacthal.

Dacamine® gives postemergence control of over 70 broadleaf weeds including dandelion, annual chickweed, knotweed and Canada thistle. Kills 'em right down to the roots so they won't come back.

Daconate® is the postemergence herbicide that knocks out nutsedge, chickweed, wood sorrel, sandbur and other grassy weeds. It's a ready-to-use liquid herbicide with a built-in surfactant for uniform wetting.

For beautiful turf and ornamentals, count on the big four from Diamond Shamrock to make your job easier.

Write **112** on free information card

Diamond Shamrock
The resourceful company.

See your turf chemicals supplier, or contact the Diamond Shamrock Agricultural Chemicals Division sales office nearest you:
Three Commerce Park Square, 23200 Chagrin Blvd., Beachwood, OH 44112 • 1760 The Exchange, Suite 100, Atlanta, GA 30339 • 5333 Westheimer, Suite 850, Houston, TX 77002 • Commerce Plaza Bldg., 2015 Spring Rd., Oakbrook, IL 60521 • 617 Veterans Blvd., Redwood City, CA 94063.

WEED AND GRASS CONTROL IS A PREPLANT CONSIDERATION

By Thomas A. Fretz, Professor and Head, Department of Horticulture, Kansas State University, Manhattan, KS

The control of annual grass and broadleaf weeds in and around annual bedding plant displays is a serious problem for those involved in landscape maintenance. The solution to this problem is most often accomplished by the laborious and costly process of manual weeding, however it should be remembered that several herbicides are available and labelled for use on annual bedding plants.

Prior to selecting one of the herbicides labelled for use on annuals, it is important to review a few of the principles of weed control. Initially, it must be remembered that in order to achieve success with a weed control program on annuals, it will be necessary to have a good idea of the weed species which are going to be present. While this is not always possible, it will be a great help in finally selecting the proper herbicide to do the job. In general, the herbicides which are are labelled for use on annuals will control annual grass and annual broadleaf weeds.

Secondly, the herbicides which are labelled for use on bedding plants are pre-emergent herbicides, thus they need to be applied prior to weed seed germination in order to be effective.

Thirdly, herbicides to be used on annual bedding plants can be applied at 2 times, prior to planting of the annuals (pre-plant) or prior to the emergence of the weeds but after transplanting of the annuals (pre-emergent). Except for an occasional spot treatment, the post emergent herbicides would rarely be used around annual bedding plants. In our research, we have generally applied the herbicides pre-emergent to weed seed germination, that is following transplanting and establishment of the annual flowers.

Also, it will generally be easier to use a granular formulation of the herbicide than either a wettable powder or emulsifiable concentrate. Our research observations have indicated that in general, less phytotoxicity occurs with granular when compared to the other formulations, however weed control is not always as satisfactory with the granules.

Well, what about specific herbicides for use on annual bedding plants? Of all of the materials labelled for this use, DCPA (Dacthal) which is available in either a 75% wettable powder or a 5% granular formulation has the broadest spectrum in terms of plant safety. Dacthal is labelled for use on alyss petunia, chrysanthem, coleus, dahlia, geranium, salvia, snapdragon, and zinnia to name a few. Applied after transplanting on clean, weed-free soil at a rate of 8-10 pounds of active ingredient per acre, Dacthal will control annual grass and broadleaf weeds including large crabgrass, annual bluegrass, speedwell, witchgrass, carpetweed, common chickweed, lambsquarter, purslane and others. Irrigation immediately after application with ½ inch of water will enhance and improve the weed control. Dacthal will cause injury to carnation, pansy, phlox, and sweet william and for this reason should not be used on these crops. A single application should control weed growth for approximately 6 weeks, after which there should be sufficient coverage of the area by the annuals to prevent or severely restrict further weed growth.

The second material which can be successfully used in annual plant beds in diphenamid (Enide). Available as a 50% wettable powder, this herbicide is recommended for use on a wide diversity of annual crops including aster, chrysanthemum, dahlia, marigold, petunia, phlox, salvia, shasta daisy, snapdragon, sweet william and zinnia at a rate of 5 pounds of active material per acre. Pre-emergent control of large crabgrass, annual bluegrass, yellow foxtail, goosegrass, ryegrass, pigweed, lambsquarter, smartweed, purslane, common chickweed, knotweed, pepperweed and shepherdspurse can be expected. As with Dacthal, irrigation immediately after application is recommended if maximum weed control is to be achieved. Also, if Enide is to be used on lighter, sandy soils, a lower application rate should be considered.

Trefluralin (Treflan) also has a broad, general purpose label which includes a great number of annuals and established flower crops. Available in either a 5% granular or a 4 pound emulsifiable concentrate formulation, Treflan in generally recommended for use as a pre-plant treatment at a rate of 1 pound of active ingredient per acre followed by mechanical incorporation to a depth of 1 inch. Treflan is safe for application on ageratum, allysum, aster, carnation, chrysanthemum, dahlia, marigold, periwinkle, petunia, phlox, portulaca, salvia, shasta daisy, snapdragon, sweet pea, sweet william and zinnia to cite a few of the more than 40 flower crops on the label.

At the 1 pound per acre rate, long lasting control of a wide variety of annual grass and broadleaf weeds including crabgrass, foxtail, goosegrass, annual bluegrass, pigweed, lambsquarter, purslane, chickweed and knotweed can be expected. In addition, if the annual beds have large amounts of organic matter present, it may be necessary to increase the rate of Treflan application in order to achieve the desired weed control.

Bensulide (Prefar or Betasan) is another pre-emergent herbicide registered for use on annual flowers, including alyssum, aster, dahlia, marigold, pansy, sweet pea, and zinnia. In addition, Betasan is labelled for use on several bulbous crops including daffodil, gladiolus, ranunculus, and tulip. Applied following transplanting and pre-emergent to weed seed germination, Betasan, in either the 12.5% granular or the 4% emulsifiable formulation, is used at the rate of 10 pounds of active ingredient per acre. Excellent control of annual grasses including, annual bluegrass, barnyardgrass, large crabgrass, foxtail, fall panicum and goosegrass can be achieved, however control of broadleaf weeds with Betasan is limited.

EPTC (Eptam) also has a label for use on several annual flowering crops, however it must be applied prior to transplanting and incorporated to a depth of 2-3 inches in the soil to be effective.

(Photo by T. A. Fretz)

Available as either a 7% emulsifiable concentrate, 5 or 10% granular, Eptam can be used safely on alyssum, ageratum, aster, begonia, chrysanthemum, dahlia, marigold, pansy, petunia and zinnia at a rate of 3 pounds of active material per acre. Control of a wide selection of annual and perennial grasses and broadleaf weeds including bermudagrass, ryegrass, purple and yellow nutsedge, quackgrass, foxtail, mugwort, purslane, lambsquarter and shepherdspurse.

Lastly Chloramben (Ornamental Weeder) can be used in annual beds, however it is not recommended for use on plantings unless they have been established a minimum of 6 weeks. Applications of 4% Ornamental Weeder at 4 pounds of active ingredient per acre will control a wide assortment of weeds including chickweed, crabgrass, foxtail, lambsquarter, pigweed, smartweed and velvetleaf. Crops tolerant to Ornamental Weeder include celosia, chrysanthemum, dahlia, marigold, snapdragon and zinnia. Because plants need to be fully established for a 6 week period prior to the application of Ornamental Weeder, it's usefulness is limited.

Lastly, one might consider a mulch in order to help reduce weed competition in annual plant beds. A 2 to 3 inch layer of organic mulch alone will help suppress weed growth, but it can also be applied after herbicide application. The mulch applied after herbicide application will help reduce herbicide losses due to volatility, but will also extend the period of useful weed control. **WTT**

WE'RE JUST A DIAL AWAY

WITH COMPLETE ELECTRICAL RUBBER TESTING CAPABILITIES

PLUS EQUIPMENT AND SUPPLIES TO COMPLETE ANY TASK IN

- Vegetation Management
- Utility Construction
- Tree Trimming
- Park & Grounds Maintenance
- Pole & Tree Climbing
- Bucket Work
- Industrial Maintenance
- Utility Maintenance
- Industrial Safety
- Traffic Control

SAFETY TEST (704) 482-7346

CALL NOW

SAFETY TEST, INC.
P. O. DRAWER 400
SHELBY, N.C. 28150

Write **156** on free information card

Circle **163** on free information card

IRRIGATION MAINTENANCE HOLDS PROMISE FOR CONTRACTORS

One possible stumbling block to an otherwise rosy future for irrigation systems is maintenance and the apparent fear of property maintenance personnel to tamper with a complex and carefully balanced network of pipes, wires and controls.

In an effort to dispel some of the fear and to point out very good potential for irrigation maintenance as a business for contractors, the Associated Landscape Contractors of America's Maintenance Committee organized and presented a program at ALCA's recent annual meeting in San Diego.

For three hours representatives from Rain Bird, Buckner and Toro provided basic instruction on controls, pipes and heads. Rod Bailey of Evergreen Services Corp., Bellevue, WA, chairman of the Maintenance Committee for 1979, suggested that irrigation installers don't want to do maintenance. Manufacturers try to help managers of large systems with training programs and do send representatives to diagnose problems where practical. But the owners or managers of medium- or small-size systems depend almost entirely on the installer at present. The maintenance contractor, especially if he already performs a service to the account, can provide irrigation maintenance service, according to Bailey.

Ron Smith, Evergreen Landscape and Maintenance of Lubbock, TX, moderated the session from a position of experience since he has made the move into the area of irrigation maintenance successfully. He outlined some of the problems of irrigation maintenance today as inexperienced personnel, lack of standard installation procedures, missing 'as built' plans to assist in location of components, and the need for alteration of landscapes to improve irrigation design, system efficiency and maintenance. Smith stressed the need to flush out a newly installed system before placing valves and heads.

Vincent Noletti of Buckner began the program with controller troubleshooting. He likened electricity to hydraulics, saying amps are similar to gallons per minute and volts are similar to pounds per square inch. Resistance relates to both systems and is measured in ohms for electricity. An understanding of electricity is necessary to figure out problems with controllers and to insure against shock hazards.

Trial and error is too time consuming and too costly Noletti stressed. There are key indicators which direct the maintenance technician to the real problem and make trial and error unnecessary.

There should be three wires to the controller: one hot wire, one common wire, and one ground. Controllers today are either electromechanical or solid state. They are interchangeable. The solid state controller requires more thoughtful programming. A record of the program should be kept in a secure but accessible place for reference. The solid state controller will be cheaper in the future, is more precise from a time standpoint, and is more difficult to change programs.

A maintenance technician should keep an extra control panel for each controller under his care. He should also have a wire cutter, wire stripper, amp meter, volt/ohm meter, water tight connectors, solenoid wrenches, valve wrenches, a fault locator, and a two-way radio.

Noletti presented three problem situations and what to check.

No valves operate by controller

1. check time of day on controller clock
2. check start wheel for times
3. check day wheel for right day
4. check start wheel adjustment
5. check on/off switch
6. check fuse or circuit breaker
7. check reset
8. check power supply with meter
9. check transformer, should reduce 120 volts to 24-30 volts
10. check fuse on transformer
11. check common wire connections
12. check common wires to valves
13. check wire splices by using as built plans
14. note any wire damage
15. check water pressure
16. check gate valve to system or back flow preventer
17. does controller cycle properly, if not replace panel

Continues on page 60

As-built plans are made after installation to record any variations from the original plans.

NEW ...from Princeton

The "Piggyback" Material Handler

It's Powerful ... Safe ... Versatile!

Princeton's mighty "Piggyback" has solved many of the problems that have always plagued heavy-duty, field quality material handlers. The remarkable "Piggyback" is light...strong...fast...durable...**AND** completely stable on the job!

The Piggyback will lift and load up to 4500 lbs. at a time ... turn quickly in its own length ... navigate curbs, logs, and other obstacles with ease...trudge through gravel, sand and mud, but float over normal soil...and then load itself onto your truck for a piggyback ride home at the end of the day.

How is it Possible?

The Princeton "Piggyback" provides an extremely low ratio of weight to carrying capacity...with complete stability. Stability is achieved by carrying the load weight between the drive wheels instead of in front, as with other fork lifts, and by special hydraulic stabilizer legs. Load is lifted to truck bed height, then rolled over truck bed by a horizontal carriage.

Heavy-duty high torque wheel motors allow the "Piggyback" to operate on steep grades or in adverse ground conditions and to drive easily over normal loading area obstructions while fully loaded.

The Piggyback's 28 h.p. Murphy 2-cylinder diesel provides superior power for all adverse operating conditions.

Loaded for Piggyback ride home.

For additional information or demonstration, write, or call collect:

Rodger Osborne, Sales Manager
955 W. Walnut St., Canal Winchester, Ohio 43110
(614) 837-9096

Dealer/Distributor Inquiries Invited

The "New Concept" People

princeton mfg. company

Write **178** on free information card

Irrigation *from page 59*

One valve doesn't operate

1. try to turn on valve manually at controller
2. check power at terminal, at bad valve, and at controller connection board. If output is at connection board in the controller, then the problem is probably in the valve or the hot wire to the valve.
3. check valve wire connection
4. check resistance of circuit; should be between 15 to 25 ohms depending upon the manufacturer.

Valve won't close

1. advance control to off
2. check output to see if it is off; if not, replace panel

The best advice is always good checkout following installation to see that all circuits have .25 to .4 amps depending upon the manufacturer.

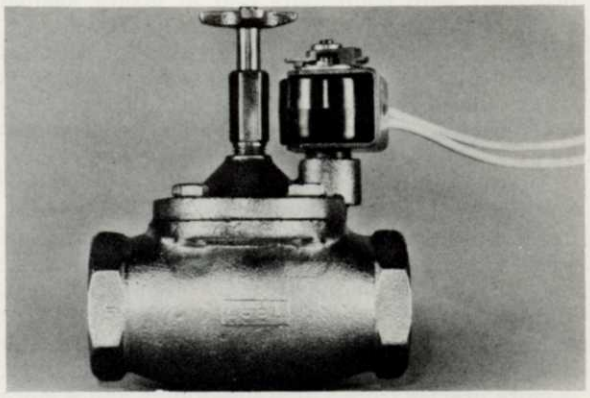
Rain Bird's Keith Kirby covered valve troubleshooting. He too stressed the need for as built plans, good water tight connection, and valve boxes.

Kirby narrowed valve problems down to four areas; no water in the system, low voltage, dirt clogging valve ports, and incorrect initial installation. There are basically two types of valves, electric or hydraulic. Hydraulic valves are usually found in warm climates only.

An electric valve is operated by current which causes the solenoid to open a port which bleeds water holding the diaphragm shut. It is a very delicate arrangement in which dirt can cause havoc. Any damage to the rubber diaphragm or blockage of ports hinders valve operation. A flow valve intended to regulate the flow of water through the valve can be closed by accident or by vandals. A closed flow valve would prevent the valve from opening even though current reached the valve as designed. A hole in the diaphragm or dirt in ports would keep the valve from shutting off. Solenoid failure would keep the valve from opening.

Kirby said there should be 40 to 50 psi in the main line for the valves to function properly. Flushing the lines twice before installing valves is recommended. When taking valves apart or putting back together care should be taken not to overtighten or strip threads.

Continues on page 62



Electric valve with solenoid and flow valve.

THREE YEARS HARD LABOR.

Faced with a life of hard labor, freezing temperatures, batterings and abuses, this Stihl® chain saw has managed to survive for three long years. But that's no surprise. We expect every Stihl power tool to last that long. And longer. You see, Stihl puts only the finest quality into its tools. From the precise engineering to the most durable metal alloys. And every tool is test run and inspected to satisfy one of the strictest quality-control programs in the industry. Is it worth a little more money for a tool that can stand a lot more labor? You be the judge.

For sales and service, see the Yellow Pages under "saws." For more information write Stihl Inc., Dept. 1215, 536 Viking Drive, Virginia Beach, Virginia 23452.

The World's Largest Selling Chain Saw.

STIHL®

Write **110** on free information card

Write **109** on free information card

Irrigation *from page 60*

Extra steps during installation save in repair time later, such as this device which protects both heads and pipe from damage.

There are special electric valves for effluent water. Using effluent in a standard valve system is doomed to failure, Kirby said.

For finding electrical shorts, Kirby recommended fault finders made by Progressive Electronics Inc., or Hewlett Packard. The devices cost from $600 to $2,000 but perform reliably, he said. These devices not only tell you where a wire problem is, they will tell you how deep the wire is in the ground.

Chris Espinoza of Toro outlined the part of the irrigation system which takes the most beating, the heads. Espinoza said rotational heads (impact, ball drive, cam drive, and gear drive) wear even with proper use over time. Jamming from debris near the head, material in the water, or tampering by vandals should be carefully watched. Espinoza said replacement may be cheaper than repair due to labor costs in some instances.

Improper installation (not level with grade or lack of drainage for heads) and lack of safety devices invite head problems. The spray should clear surrounding grass without any special trimming around heads and puddling near heads should be corrected with use of gravel under and around the head. Correct water pressure is another major cause of malfunction for heads he said. Occasionally the problem will be traced to a backflow preventer which has its own gate valve. If this valve was tampered with, water flow will be incorrect for the design.

Espinoza suggested replacing shrub risers to pop ups for liability and maintenance reasons. He also suggested use of double swing joints during installation to prevent damage to lines underneath and to heads.

Overall, Espinoza proposed that the long term cost of a system should be considered as well as the short term. Using fewer heads, cheaper heads, less durable heads, and skimping on maintenance service could result in costs above those originally anticipated or desired. **WTT**

Bolens introduces the first mid-size diesel system where all the pieces fit.

To you, a mid-size diesel is a working tool that you depend on 7 days a week.

Which is why Bolens created the mid-size system that works.

It works because it's the first totally integrated diesel system. Only Bolens designs and manufactures their own mower, front blade, snow thrower and tiller especially to fit their 15–25 hp diesel tractors.

And Bolens offers a full line of other attachments, all double-checked for a custom fit.

Which means no wasted time waiting for a dealer to adapt attachments and less time lost when you need to change them on the job.

Getting service isn't a hassle either.

Factory-trained Bolens dealers are part of a single supply system that gets you attachments and parts when you need them from strategically located, regional distributors.

So if you're a farmer, homeowner, contractor, landscaper, or anyone else who needs a tough, dependable, economical diesel to work with, get with the Bolens system.

It works because all the pieces fit.

FMC
FMC Corporation
215 South Park Street
Port Washington, Wisconsin 53074

BOLENS DIESELS
You can't beat the system.

Write **139** on free information card

News *from page 16*

WEEDS

Catskills host 34th annual NEWSS meeting

The Northeastern Weed Science Society brought forth 147 scientific papers, the most ever presented at a NEWSS meeting, when the society met at a resort facility in January.

Sessions discussed at Grossinger's Hotel and Country Club included ecology, physiology, and soils; horticultural crops; agronomy; industry, forestry, and conservation; ornamentals; and turf. A symposium on pesticide interactions also was added to the agenda this year.

President James V. Parochetti, USDA-SEA-Extension, Washington, DC, opened the general session by focusing on the agricultural practices, terminology, and expectations of the 1980's. Dr. J.M. Witt, of Oregon State University, followed with a keynote address critiquing the EPA Alsea II 2,4,5-T report.

The society recognized three member scientists with the Distinguished Member Award: John F. Ahrens, department of plant pathology and botany, Connecticut Agricultural Experiment Station at Windsor; John E. Gallagher, product development manager for aquatic weed control with Union Carbide Agricultural Products Co., Inc.; and Richard D. Ilnicki, department of soils and crops at Rutgers University.

New officers for 1980 include: president, M.G. Schnappinger, Ciba-Geigy Corp., Centreville, MD; secretary-treasurer, R.R. Hahn, agronomy department, Cornell University, Ithaca, NY; president-elect, R.B. Taylorson, USDA-SEA-AR, Beltsville, MD; and vice president, Stephan Dennis, Stauffer Chemical Co., Dayton, NJ.

Mallinckrodt offers systemic/fungicide

The Specialty Agricultural Products Div. of Mallinckrodt, Inc., St. Louis, MO, has introduced Duosan, a broad spectrum turf fungicide which combines both systemic and contact control.

The scientifically formulated combination results in a synergistic effect with the two ingredients complementing and magnifying each other. Duosan controls most major spring and summer dieseases except Pythium.

ARBORICULTURE

New York groups merge into ISA chapter

The merger of the New York State Arborists Association and the International Society of Arboriculture, New York Chapter, into the New York State Arborists, I.S.A. Chapter, was announced in January. The two groups elected to merge to effect stronger and wider industry goals, according to newly elected President Jon Hickey.

Dennis Ryan, assistant professor and arboriculture program director

Continues on page 66

SUPER-SEEDER

Why spend more when you can get the best for less?

For hydro-seeding & liquid fertilizing.

FEATURES —

- All hydraulic agitation
- No sprockets or chains
- No bearings or seals to leak
- Twin pumps — electric start
- Fast mixing
- 950 gallon capacity
- Coated inside and out with anti-corrosion paint

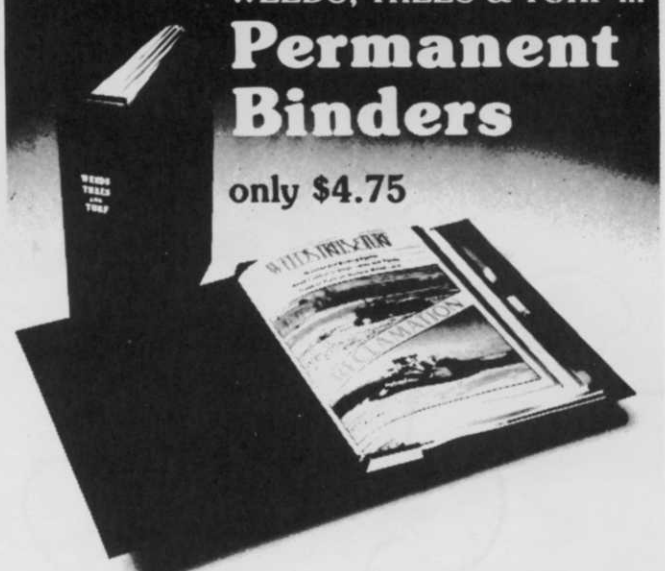
SOLARCELL LAND AND BUILDING, INC.
412 113th Street
Arlington, Texas, 76011 817-640-1488

Write **160** on free information card

Preserve Your Copies of WEEDS, TREES & TURF in

Permanent Binders

only $4.75



Custom-made binder easily holds entire year's copies of WTT magazine. Green binder with gold embossed logo protects your magazines and gives your library a neat appearance. Magazines can be inserted as they are received. Annual index in December issue makes it easy to find information you need quickly . . . Send check or money order to:

WEEDS TREES & TURF
9800 Detroit Ave.
Cleveland, Ohio 44102
(Add $1.25 per Binder Shipping Chg.) Allow 6-8 Weeks Delivery.

WISH #1 "I wish I had a tough pick-up mower that would mow and vacuum all in one pass.

WISH #2 "I wish that same pick-up mower would work year 'round thatching, verti-cutting, cleaning up, mowing, sweeping leaves and mulching."

WISH #3 "I sure wish I could change from mowing to thatching blades in less than an hour—with no tools."

IT ISN'T MAGIC! IT'S THE LAWN GENIE.

The one and only tough pick-up mower with patented spring-loaded blades that change in seconds.

For more information, contact the distributor nearest you....

Adams Equipment, Inc.
2205 E. Joppa Road
Baltimore, MD 21234
301-668-0500

Adams Equipment, Inc.
Box 1085, Blair Station
8001 Newell Street
Silver Spring, MD 20910
301-585-1322

Central South Turf
4425 Poplar Level Road
Louisville, KY 40213
502-459-2140/2144

Central South Turf Dist., Inc.
2837 Logan Street
Nashville, TN 37211
615-832-7725

Chicago Toro Turf-Irrigation, Inc.
911 Hill Top Drive
Itasca, IL 60143
312-773-5555

Richmond Power & Eq. Co., Inc.
1904 N. Hamilton Street
Richmond, VA 23230
804-355-7831

E.J. Smith & Sons Company
4250 Golf Acres Drive
Post Office Box 668887
Charlotte, NC 28266
704-394-3361

Storr Tractor Company
Post Office Box T
1750 Goldbach Avenue
Ronkonkoma, Long Island, NY 11779
201-722-9830

Storr Tractor Company
3191 Route 22 East
Somerville, NJ 08876
201-722-9830

Goldthwaite's of Texas
1401 Foch
Fort Worth, TX 76107
817-332-1521
(Dallas - Houston - San Antonio)

Grassland Eq. & Irrigation Corp.
892-898 Troy-Schenectady Road
Latham, NY 12110
518-785-5841

Hector Turf & Garden, Inc.
110 N.E. 179th Street
Post Office Box 693544
Miami, FL 33169
305-652-4470

Lawn & Garden Supply
2222 N. 27th Avenue
Phoenix, AZ 85009
602-278-8585

Lawn & Garden Supply
5455 South Nogales Highway
Tucson, AZ 85706
602-294-3177

Taylor Pearson & Carson
3525 Cornett Road
Vancouver, British Columbia,
Canada V5M 2H4
604-433-2481

Wislar & Company, Inc.
4505 Mills Place, S.W.
Atlanta, GA 30336
404-691-4801

Wislar & Company, Inc.
133 W. Oxmoor Road, Suite 231
Homewood, AL 35209
205-942-7888

Orange Turf Supply
11528 Martens River Circle
Fountain Valley, CA 92708
714-957-1262

M·C MATHEWS COMPANY

LAWN GENIE®

THE PROFESSIONAL'S CHOICE

A Product Of...Mathews Company, P.O. Box 70, Crystal Lake, Illinois 60014

Write **149** on free information card

at the State University of New York, Farmingdale, was elected first vice-president. John Hawthorne, Hawthorne Bros. Tree Service, Bedford Hills, was elected second vice-president, and Robert J. White, Arista Tree Service, Callicoon, was elected third vice president.

WEEDS

Scientists discuss pesticide regulations

Agriculture needs pesticides to do a better job feeding the world's hungry, said a group of international, federal, and state scientists attending the Weed Science Society of America meetings held in Toronto in February.

Dr. Virgil Freed, director of the Environmental Health Sciences Center, Oregon State University, said that the opportunity for food production technology to keep pace with the expanding numbers of the world hungry is being eroded away by excessive environmental concerns and over-regulation.

Scientists also recommended that the U.S. Environmental Protection Agency restore the suspended uses of 2,4,5-T and silvex for pastures, forests, and rights-of-way at t 20t annual meeting.

Officers of the society for 1980 include: Dr. W.D. Carpenter, Monsanto Co., St. Louis, MO, president; Dr. D.E. Davis, Auburn University, Auburn, AL, president elect; Dr. T.J. Sheets, North Carolina State University, Raleigh, NC, vice president; Dr. J.D. Nalewaja, North Dakota State University, Fargo, ND, secretary; and Dr. G.H. Bayer, Agway Inc., Syracuse, NY, treasurer.

PESTICIDES?

1979 pesticide market estimated $5.1 billion

The Environmental Protection Agency has estimated the 1979 U.S. pesticide market to be $5.1 billion, of which agriculture accounted for $3.2 billion or 63 percent.

These and other estimates are among 1979 pesticide industry sales and usage market estimates from the Economic Analysis Branch, Benefits and Field Studies Division, Office of Pesticide Programs, EPA.

Of the estimated $5.1 billion market, the Branch estimated that industry/government accounted for $3.1 billion or 25 percent, and home/garden for $0.6 billion or 12 percent.

Further, it estimated that in 1979 total farm production expenditures would be $105 billion of which $3.2 billion or 3 percent would be farmer expenditures for pesticides.

The Branch also provided the following U.S. pesticide industry profile: 30 basic producers; 3,300 formulators; 1,400 registered active ingredients; 1,100 active ingredients in production; 200 major active ingredients; and approximately 35,-500 formulated products.

Seed, fertilize, dispense insect and weed controls and aerate, all at once!

Save time and cut labor costs with Trac'n Combo, the incredible new modular combine that does it all in one pass. It's easy to operate, and mounts onto any tractor in minutes.

For more information, call 201-494-1413 collect, or write to: Trac'n Combo, Inc., P.O. Box 7, Metuchen, NJ 08840.

Trac'n Combo

Dealer inquiries welcome.

U.S. patent pending

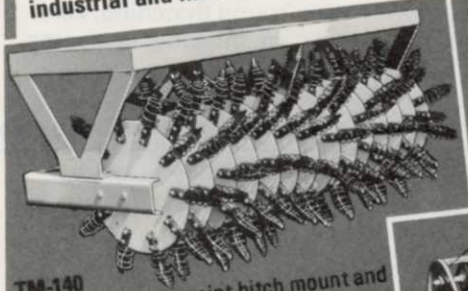
Illustration of Trac'n Combo mounted on any tractor does not imply tractor manufacturer's endorsement of the unit.

Circle **182** on free information card

Hahn

THE TURF PROFESSIONALS

A complete line of Aerifiers for fairways, athletic fields, industrial and institutional lawns . . . at prices you will like!



Also available: A precision Verti-Cut Thatcher specially designed for golf green maintenance

TM-140 6 ft. swath. Three-point hitch mount and weight rack. Also available with wheels and hydraulic lift.

AB-1 Aeri-Boy: 4 ft. swath.

JR-3 Aerifier® 2 ft. swath. Self-propelled, fast and maneuverable.

Optional Spoons and Blades for double utility.

DEALERS WANTED (812) 428-2025

Hahn 1625 N. Garvin St., Evansville, In. 47711

Write **124** on free information card

Golf *from page 13*

that they are merely a playground for the wealthy. They are one of the greatest components of the urban "Green Belt" through which people preserve natural environments.

McLaughlin also recommended expanding the functional use of golf courses as filter bases for recycling waste water. He urged superintendents to be more demanding of manufacturers to keep costs down through energy efficient manufacturing and to develop more efficient irrigation systems. The superintendent must express his willingness to experiment and to test new technologies.

GCSAA's Distinguished Service Awards were presented to Manuel Francis and Dr. John Madison. Francis' career as a superintendent, designer and consultant has spanned more than 60 years. Madison previously served the turf industry as a California educator, researcher, and author.

Melvin Lucas, superintendent of Piping Rock Club, Long Island, N.Y., was elected GCSAA President for 1980. Michael Bavier, superintendent of Inverness Golf Club, Palatine, IL, was elected vice president. The 52nd International Turfgrass Show will be in Anaheim, CA, in January.

NURSERY

Nursery trade called "people business"

A California nurseryman told participants at the Annual Nurserymen's Short Course at Texas A&M University that "we are in the people business and we must have commitment and enthusiasm to succeed in the 1980's."

Ken Cook from The Growing Grounds in San Diego challenged his audience "to never rest on your laurels—your past accomplishments. You must make each and every day a special experience for the guest that walks into your place of business."

Another speaker, Sidney Meadows, owner of Flowerwood Nursery, Mobile, AL, talked about the people employed by the nurseryman. He said the right people with proper training can solve the biggest problem in nursery production—lack of productivity.

"The day of the small nurseryman is still here," Meadows said. A worker is like a student. If he is given work under his level of ability, he will get bored; if given too much responsibility, he will become frustrated and quit.

GOLF

Golf superintendents elect new officers

Melvin B. Lucas Jr., superintendent of Piping Rock Club, Locust Valley, Long Island, NY, was elected president of the Golf Course Superintendents Association of America during the association's annual meeting Feb. 20 in St. Louis.

Michael R. Bavier, superintendent of Inverness Golf Club, Palatine, IL, was elected vice president for 1980.

New members of the association's board of directors are Robert W. Osterman, superintendent of The Golf Club of Aspetuck, Easton, CT, and James W. Timmerman, superintendent of Orchard Lake Country Club in Michigan. Osterman and Timmerman will serve three-year terms.

President Lucas appointed James A. Wyllie, superintendent of the Bayview Country Club, Toronto, Ontario, to serve as secretary-treasurer. Lucas also appointed Paul Boizelle.

TRADE SHOW

Mid-America show breaks past records

The 1980 Mid-America Trade Show, held in January at the O'Hare Exposition Center in Rosemont, IL, attracted the largest audience in its history.

A total of 4,487 buyers visited the show, spending $1,916,954, for an average of $428 per buyer. These figures represent a big jump compared to past shows.

Companies attending Mid-Am/80 totaled 246, occupying 386 booths. The total attendance, including exhibiting personnel, guests, students, and press, was 5,744, also a record.

Self-Propelled Turf Sprayer

Circle **115** on free information card

GORDON'S
PROFESSIONAL TURF PRODUCTS
TRIMEC®
BROADLEAF HERBICIDE
Kills: DANDELIONS KNOTWEED HENBIT
CHICKWEED PLANTAINS SPURGE
and Many Other Broadleaf Weeds
Contains: 2,4-D, MCPP and Dicamba
ONE GALLON COVERS 2-2½ ACRES.
KEEP FROM FREEZING
CAUTION: Keep Out of Reach of Children
See Back Panel for Additional Cautions
NET CONTENTS ONE U.S. GALLON
(3.785) LITERS
The Keystone of
Immaculate Turf

It still costs less to go first class.

Immaculate weed-free turf not only looks better, it also costs less.

Read how Trimec® Turf Herbicide can save you time and money, and make your work more fun.

It costs less to go first class. How many times have you heard that old truism? You know it's a fundamental fact of everything in life, but in no other phase of today's economy is it more graphically demonstrated than in the world of weed control in professional turf management.

When a turfman tries to skimp along with a narrow-spectrum herbicide on the theory that it will control the major eyesores like dandelions and chickweed, and will cost less per gallon than Trimec — he opens the door to an endless chain of problems and expenses.

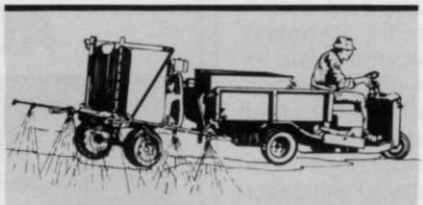
Perhaps the worst consequence is the emergence of some ugly weeds of the hard-to-kill variety that he once considered to be so rare that he didn't even think of them as a problem in his area. And, when these weeds come, they come as a crowd... out of nowhere.

Of course, you know where they came from and why they came. They're the natural consequence of using a narrow-spectrum herbicide in an area that is fertilized and watered.

The hardy weeds (which were not controlled by the narrow-spectrum herbicide) are nourished by the fertilizer and water, and fight with the grass to fill the vacancy left by the demise of the sensitive weeds. Some of them win, and weeds that were once obscure become prominent.

There's really only one efficient way to cope with the problem, and that is the Trimec way.

Trimec is the one turf herbicide with a broad enough spectrum to get those hard-to-kill weeds right along with the common, sensitive ones. How many species of broadleaf weeds will Trimec control? We are still looking for the economic broadleaf weed that Trimec will not control when applied at the right times and rate. If we ever do find such a weed, we will be very surprised. No other selective herbicide can match the broad spectrum of Trimec.



How many species of broadleaf weeds will Trimec control?

We are still looking for the economic broadleaf weed that Trimec will not control when applied at the right times and rate. If we ever do find such a weed, we will be very surprised. ***No other selective herbicide can match the broad spectrum of Trimec.***

Yet, with all this power, Trimec is friendly to the environment in terms of safety to grasses, because no ingredient in Trimec is at a phytotoxic level.

And when you get to the bottom line, Trimec is less expensive than its less-effective contemporaries because it requires less chemical per acre for maximum weed control, and it saves labor costs because it does it right the first time so you don't have to do it over. Thus, when you use Trimec, you not only look good to the greens committee... you also look good to the finance committee.

Only Trimec gives you all of these benefits

- Controls the widest range of broadleaf weeds
- Gets hard-to-kill species with one treatment
- Wide safety margin for lawn grasses
- Minimum hazard from root absorption
- No vapor action after application
- Effective weed control in wide temperature range
- Unique formula overcomes water hardness problems
- Treated areas may be seeded within two weeks
- Non-flammable and non-corrosive in use
- Product stable several years above 32° F.
- Biodegradeable; friendly to the environment
- Bentgrass formula also is available.

In summary

The Trimec record speaks for itself. No other turf herbicide available today is the equal of Trimec, not only in providing superior broadleaf weed control, but also in terms of safety to grasses — and in total cost. No wonder an overwhelming majority of golf course superintendents agree: *Dollar for dollar and acre for acre of immaculate, weed-free turf, Trimec is the most efficient broadleaf herbicide on the market ... period.*

See your authorized Gordon distributor, today.

Trimec® is a registered trademark of PBI/GORDON Corporation, U.S. Patent No. 3,284,186.

GORDON'S

PROFESSIONAL TURF PRODUCTS

pbi/gordon corporation

300 SOUTH THIRD STREET
P.O. BOX 2276
KANSAS CITY, KANSAS 66110
913-342-8780

Write **130** on free information card

Arboriculture *from page 32*

Job market

With some 14,000 open arborist positions in the country, it is doubtful that the twelve new arborists from Farmingdale's Arboriculture program will have much trouble finding a job. According to the Chairman of the Department of Ornamental Horticulture, Dr. John Hyde, the department as a whole gets five job offers per student. But will the newly trained arboriculture students be satisfied with what the industry has to offer them? That is a question in the minds of a lot of people.

Many in the Arboriculture Industry feel that it usually takes the average starting Arborist anywhere from two to three years of internship as either a climber or sprayer before obtaining any type of management position. There is concern that some of these newly trained arborists might become dissatisfied with the noncompetitive salaries of the Arboriculture Industry at the onset of their careers.

It certainly seems that The Industry has a responsibility to the students, since it was the Industry's campaigning that helped to create the program. If they want good people they may very well have to become more competitive about getting them than in the past. Once Arboriculture students start graduating from the State University at Farmingdale, there will be more trained people to choose from in the New York area and this might very well reduce the high turn over in personnel, experienced by the industry each year.

Anyone interested in the Arboriculture option can write to either Professor H. Dennis P. Ryan or The Director of Admissions, State University of New York, Agricultural and Technical College, Melville Raod, Farmingdale, N.Y. 11735.

AQUAPROBE

Sub-Soil Moisture Tester

AQUAPROBE takes the guesswork out of soil moisture testing. Scientifically measures moisture at depths from 2 to 26 inches. No digging; no fixed point of measurement. Amazingly light-weight, portable and easy to use. Aquaprobe is low in cost, too. Write:

HOWARD S. CRANE, INC.
Oneida, N.Y. 13421

Write **113** on free information card

IT ARRIVES WITH THE LOAD, UNLOADS ITSELF . . . . . THEN UNLOADS THE LOAD!

The SPYDER®

THE SPYDER — A material handler that offers unequaled performance, low maintenance and operating costs. Over 800 are currently being used by SOD producers and allied industries across the U.S.A., Canada and England.

We also provide a custom-designed lightweight trailer for convenient towing behind a car or truck if this method better meets your requirements.

If you have delivery problems, let us show you how the Spyder can solve them.

COMPARE this user proven material handler with other methods of job site unloading and the bottom line will show you that THERE IS NO BETTER WAY!!

For more information on the Spyder call or write: Mike Whitt - Sales Manager
Foxcroft Development Associates
5402 Edgewood Rd.
Crystal Lake, IL 60014
815-459-3351

Circle **123** on free information card

Introducing the Front Line.™ The first mower built tough enough to be a Cushman.

There's a good reason why Cushman has been around for such a long time: We build equipment that lasts a long time.

And that's never been more obvious than with our new Front Line rotary mower.

Built for keeps.

The Front Line's 72" mower deck is made of 12-gauge carbon steel, reinforced and arc welded. It has a multi-disc PTO clutch, direct drive to the deck gear box with a sealed and lubricated shaft drive. The hydrostatic transmission is driven by two continuously engaged "A" section belts with self-adjusting tension.

There's no need to worry about overloading the Front Line's engine. The combination of our high torque engine and specially designed mower deck allows you to mow tall weeds and fine grass.

Superior performance.

The Front Line's cut in fine grass is so smooth, you won't believe it was made with three separate blades. That's because the blades overlap 1½" to reach every inch of grass in the full 72" swath. Also, the cutting height is adjustable to eight positions, from 1" to 4½" in half-inch increments.

Operating the Front Line couldn't be easier. With individual front wheel brakes, and wheel-type steering controlling a single rear wheel, you get tight maneuverability and better control on varying terrain.

The Front Line's mower deck makes your job easier, too. It extends more than a foot to one side, so you can trim right up to fences or trees. And it lifts hydraulically for transport over curbs. What's more, a large capacity fuel tank lets you work up to 6 hours between refills.

100% Cushman.

Most rotary mowers use engines built by outside suppliers. Not the Front Line. Its 18-hp, air-cooled engine is all-Cushman. So is the differential. And the PTO drive. Which means all parts and service are provided by your Cushman dealer.

Send us this coupon today, and we'll tell you more about the new Front Line: The only mower built Cushman-tough. 80-CUT-5

YES, I want more information on the new Front Line™ rotary mower. Prove to me that it really is tough enough to be a Cushman.

Name _____

Title _____

Address _____

City _____ State _____

Zip _____ Telephone _____

CUSHMAN®

2076 Cushman, P.O. Box 82409, Lincoln, NE 68501

Secondly, in January of 1978 we were given the opportunity to expand our crew by 3 positions. The catch was, we could not hire professionals, we had to train our own. Consequently, we developed an 18 month training program combining I.S.A.'s Training and Safety Guide, N.A.A.'s Professional Home Study Program for Arboriculturists, and O.J.T.

I will grant you, our primary concern is public safety, which involves raising trees over streets and signs and eliminating visual obstructions, which brings me back to my concern for Halsted's statement of "The guys say now they don't have time to trim; they only have time to raise trees for the streets".

Regardless of the size of the job or the complexity, our crews hold the health and structure of that tree in equal concern to that of public safety because they know that today's mistake can be tomorrow's accident.

As any other professional trimmer, they care about the tree they trim, whether it's one limb or a block of street trees.

To use Mr. Halsted's words, "these are the kind of people I have and this is the type of thing we do. It's what makes us number one. We still have a ways to go". Like Mr. Halsted I would say we also have a way to go. I will, however, put our crews among the best.

Adrian Stansfield
Supervisor - Park Operations
Jeffrey A. Hale
Supervisor - Arboriculture
Parks and Recreation Maintenance Div.
Eugene, OR.

I was aghast to see in Doug Chapman's article such high praise for silver maples, one of the poorest selections one could make for a shade tree. While the advantages of rapid growth and tolerance of urban adversity may be obvious, the disadvantages soon become evident, too. The wood is brittle (in fact, few trees are more subject to breakage from ice accumulation than silver maples, according to W.C. Croxton); the bark is thin and thus easily injured; and older specimens are commonly hollowed out by decay so that they are hazardous. The rooting habits are often a problem, too.

Mr. Chapman does point out that this tree requires pruning on a two or three year cycle to preclude the aforementioned maladies. That advice alone should be sufficient to encourage selection of some other species. How many homeowners are going to invest such time and money in their trees? Most ignore their trees until disaster strikes.

Both Pascal Pirone and George Hepting label silver maple as undesirable, and I shall encourage others to take their advice over Mr. Chapman's.

Edward P. Milhous
Extension Agent
Manassas, Virginia

Vegetation Problems?

Spike®

Try Spike granular also

is the tough one!

Spike lasts longer than most other herbicides with fewer pounds per acre!

When applied in accordance with label directions, commercial field use has proven that Spike remains effective longer than other products tested, preventing regrowth and permitting lower application rates in succeeding years.

Spike resists lateral movement!

Spike is non-volatile, control stays where it is needed instead of "shifting" into unwanted areas, enabling specific placement.

Spike gets many vines, brambles and woody plants!

Years of commercial use have proven Spike's effectiveness against a wide spectrum of undesirable and unwanted vegetation, especially the tough perennials tenacious vines, and so called hard to control species, like mullein, pigweed, curley dock, and kochia.

Spike gets many of the brush species the others leave behind!

The most persistent vegetation control problem is **brush.** Spike helps solve that problem almost any time of year . . . and Spike is really tough on white oak, white ash, and big leaf maples.

Spike provides versatility and easy application!

Commercial use has proven equal effectiveness for both of Spike's principal product forms . . . wettable powder for spray application, or granular for mechanical application.

Wherever weed and brush control is the problem . . . in storage yards, parking areas, tank yards, around buildings and warehouses, along road shoulders, fence rows, ditchbanks and railroad spurs . . . the ideal remedy is SPIKE. It **does** what it **promises!**

Order Spike from your Elanco Distributor today. Spike should be the **foundation** of your vegetation control program.

Also available as a granular form in 50 lb. bags and a convenient to use dispenser box.

ELANCO

SPIKE is a registered trademark for Elanco Products Tebuthiuron

To avoid killing desirable vegetation, read label before application.

Write **147** on free information card

Elanco Products Company, A Division of Eli Lilly and Company, Dept. E-455, Indianapolis, Indiana 46206 U.S.A.

Toro introduces trimmers to be called

You work hard for a living.

You need equipment built to do an honest day's work, too.

So Toro has come up with trimmers and blowers good enough to be called Professionals.™

They're specifically designed for parks, schools, golf courses, offices and other commercial users.

Ruggedly engineered to give you dependable service.

And reliably powered by the world famous Kioritz air cooled, two cycle, gasoline engine.

Our **21cc trimmer** is ideal for quick trimming jobs. Weighs only 11.9 lbs. and has an automatic head that feeds new line with just a tap on the ground.

Our **21cc deluxe trimmer** is for longer stretches of work on grass, weeds and brush. It's easily maneuverable with an adjustable U-handle control and wide strap harness for operator comfort.

Our **30cc trimmer/cutter** is heftier and more powerful for sustained chores on everything from grass to light brush. Its fixed head with heavy duty nylon line and 10" weed cutter are both standard.

21cc Deluxe Trimmer

40cc Back Pack Blower

21cc Hand Held Blower

The Toro Company, 8111 Lyndale Ave. So., Minneapolis, MN 55420.

and blowers good enough Professionals.

30cc Trimmer/Cutter

21cc Trimmer

Got tougher jobs? Our trimmer accessories include a 10" circular saw blade for thick grasses, tall weeds, scrub trees and the like.

And, to blow hours of work away in minutes, take your choice of two new Toro® blowers:

Our **21cc hand held blower** is just 9.7 lbs. but discharges air at 102 mph. Perfect for "quickie" jobs clearing leaves, dust and light debris off sidewalks, flowerbeds and smaller areas.

Our **40cc back pack blower** produces an air velocity of 276 mph to gather leaves and all kinds of litter from lawns, driveways, parking lots, stadiums and other areas. And it goes where you go, easily and comfortably.

Want to know more about the trimmers and blowers good enough to be called Professionals? Call your Toro distributor for more information.

TORO®

The Professionals™

Circle **105** on free information card

ORTHENE–INSECT PROTECTION AT ITS BEST.

ORTHENE® Tree & Ornamental Spray is a giant step forward in protection. It kills a wide range of insects, on contact and with a lasting residual action. In fact, it's probably the only insecticide you need.

Here are some of the insects it kills: aphids, bagworms, birch leafminer, tent caterpillar, Douglas Fir tussock moth larvae, gypsy moth larvae, webworms, scales, California oakworm, spring and fall cankerworms, Nantucket pine tip moth larvae, and adult root weevil.

NEW FROM ORTHO

A companion product from ORTHO is ORTHO-MITE™ Ornamental Miticide. It's the perfect solution for mite problems on flowers and ornamentals.

AVOID ACCIDENTS: For safety, read the entire label including precautionary statements. Use all chemicals only as directed.

FOR PROFESSIONAL USE
ORTHO PRO

Chevron
ORTHO
Chevron Chemical Company

TM's ORTHO, CHEVRON, CHEVRON DESIGN, ORTHENE – REG. U.S. PAT. & T.M. OFF.

Please send me more information on ORTHENE.

Name_____

Company_____

Street Address_____

City_____ State_____ Zip_____

Mail to: R. G. Gras, Chevron Chemical Company,
575 Market Street, San Francisco, California 94105

The Land Reclamation Report

The Land Reclamation Report will be a monthly feature of Weeds Trees & Turf Magazine. We stand by in support of those contractors and mine operators who must contend with rules that change monthly. We hope to alert our readers to these changes and to the eventual demand for revegetation services when laws are coordinated with national energy policies and the real value of coal is finally recognized.

OSM alters bonding regulation proposal

The large, long-term bond which represented a major roadblock to small- to medium-sized surface mine operators has been softened with alternatives in the latest proposal from the Office of Surface Mining.

Alternatives include:

- pledging real or personal property in lieu of a bond.
- incremental deposits over a period of time.
- liability limited to the post-mining plans for the land.

Still, operators wince at the five to ten-year length of liability. And there are still problems with the basic law which bother the surety industry.

MARC asks pledge in draft to President

The Board of Directors of the Mining and Reclamation Council of America has drafted a resolution requesting a national commitment to coal by the President and the entire Administration.

The two-page statement summarizes the reasons for a national commitment to coal and asks that:

- a program for conversion of oil and gas burning utility and industrial boilers to coal;
- removal of inhibitory regulations by EPA, DOI, and the ICC;
- modification of Clean Air Act;
- increased export of coal;

and an overall public commitment to coal and its increased use and production.

ALCA committee plans to beef up program

The Erosion Control Committee of the Associated Landscape Contractors of America has decided to step up its programming, beginning with a summer program to be held at a mine site. Equipment demonstrations under field conditions, observation of a job in progress, and a round table discussion of production problems and techniques are planned. One hope is to provide comparative equipment trials in a field location.

ALCA plans to change the name of the committee to the Land Reclamation Committee and increase its importance in the overall structure of association meetings.

Fifth of surface mines closed in 1979

During one of the most critical energy shortages felt in this nation, the number of surface coal mines dropped by 20 percent because of overly stringent air pollution regulations. Furthermore, it is estimated another 15 percent of those remaining will fail in 1980, according to Ben E. Lusk, president of MARC.

Overkill by the Office of Surface Mining and the Environmental Protection Agency is the main cause of the business failure, despite critical energy needs. A number of candidates for the Presidency have taken positions on coal, but nothing has come from the current administration which offers any relief.

Missouri mine program first approved

The Missouri Department of Natural Resources will receive $198,-193 of fees collected under the Surface Mining Control and Reclamation Act of 1977 to compile data on abandoned mine land problems within the state. Missouri is the first state to receive funds for an inventory.

The information developed will be used to determine plans, priorities, budgets, schedules and appropriate techniques for reclaiming the abandoned mines in the state.

Four watershed projects to get planning aid

Projects in New York, Minnesota, and North Carolina will receive assistance from the Soil Conservation Service to develop watershed plans.

They include Brandywine Creek Watershed, Broome Country, NY; Dyke Creek Watershed, Allegheny County, NY; Snake River Watershed, MN; and Moss Neck Watershed, Robeson County, NC. The four projects will protect the watersheds they serve from erosion and siltation and help prevent flooding and poor drainage.

Coal conversion bill may be passed in 1980

Kentucky Senator Wendell Ford said in March that Congress should finish action on a new coal conversion bill outlined by the Carter Administration this year and send it to the President for approval.

The bill, which establishes a two-phased program aimed at displacing one million barrels per day equivalent of oil and natural gas in the electric utility sector by 1990, was presented by Administration energy officials to coal state members of Congress at a briefing in the Capitol. Senate majority Majority Leader Robert C. Byrd (D-W.Va.) said work would begin immediately on developing the proposal into legislative form with a companion bill expected in the House at the same time.

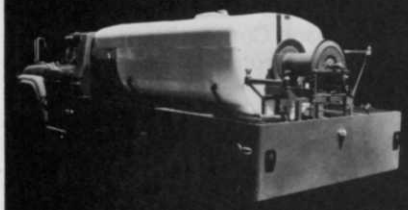
The other senator from Kentucky, Walter Huddleston has added that a policy of stopping the use of oil and gas for utility power generation should be inherent in any national energy policy. Ford said the Administration wants the bill before Congress adjourns.

Pickseed establishes new sales facility

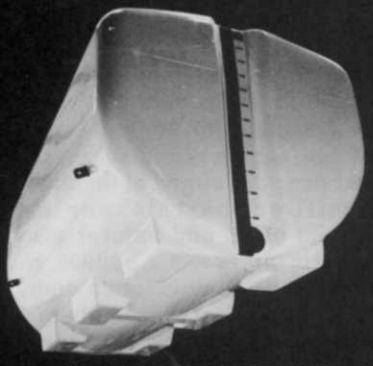
Pickseed has opened a distribution center in Calgary, Alberta, from which it intends to serve the entire province of Alberta, western Saskatchewan, and eastern British Columbia.

LASTS A LIFETIME
Tuflex MFG. CO.
FIBERGLASS PRODUCTS

WHEN THERE'S NO SUBSTITUTE FOR THE BEST!



Model #PC 1200 fiberglass tank equipped with fiberglass pump cover, Model #D 200 gallon mixing tank shown mounted on a custom truck body by Strong Enterprises.



Bottom view of the Model #PC 1200 tank showing to best advantage the integral molded mounting base and steel hold-down lugs designed for ease in mounting on your truck and eliminating costly installation.

***THE* Tuflex Manufacturing process allows a five year warranty on all tanks.**

Tuflex is the only manufacturer to specialize in *seamless* fiberglass spray tanks specifically for the pest control and lawn care industry. Remember when craftsmanship was an art... at Tuflex it still is! The exclusive Tuflex process carries a full five year warranty on all handcrafted seamless fiberglass tanks.

For economy prices and more information on our complete line of tanks, write or call now:

Tuflex Manufacturing Company
Post Office Box 13143
Port Everglades, Florida 33316
(305) 525-8815

Write **144** on free information card

News *from page 16*

INTERIORSCAPE

Commercial input builds at Florida course

The 1980 National Tropical Foliage Short Course in combination with a "New Concepts" show brought researchers, industry exhibitors, and participants together January 27-30 at the Sheraton Twin Towers Hotel in Orlando, FL.

This year marked the 10th short course, which is now sponsored by the Foliage Education & Research Foundation (FERF) a division of the Florida Foliage Association (FFA). Experts from all parts of the country spoke, with a large diversity present for the interiorscape sections, the largest attended.

"This year's program was the strongest across the board," said Dr. Richard Henley, a member of the Agricultural Research Center in nearby Apopka. "We had top notch speakers and more industry input."

Talks ranged from tissue culture to production of various plants to tools and equipment used in the greenhouse. More than 1,000 people attended the course.

NURSERY

Study calls for aid to small-scale farmers

More research and technical assistance programs are needed to help small-scale farmers raise their incomes from farm and other sources, according to a recent study by a committee of the Joint Council on Food and Agricultural Sciences.

Some of this research should identify the characteristics of small farms and small-scale farm families, according to the study, which was prepared by the council's ad hoc small farm committee. The research is expected to deal with characteristics, resource management and product marketing, community infrastructure, appropriate technology, quality of life, and policy.

The study calls for federal funding totaling 25 million in research and extension programs aimed at helping solve problems unique to the nation's two million small-scale farmers.

DON'T CUT OUT QUALITY.

DO IT RIGHT, WITH STANLEY.

Quality, by our standard, is something which goes a lot further than making tools. To Stanley, it means: a full line of tree trimmers for every job; the best warranty in the business; complete parts backup; and distributors to help you anywhere in the country. It's also the efficiency, safety and dependability of hydraulic power. We don't trim on anything so that you're able to do your trimming faster. Stanley Hydraulic Tools: 3810 S.E. Naef Road, Milwaukie, Oregon 97222. Phone (503) 659-5660. Telex 360771. Write or call.

STANLEY®

Write **127** on free information card

ARBOTECT® 20-S
The strongest Dutch elm disease protection you can give a tree.

ARBOTECT 20-S fungicide helps make it possible to save many elm trees that otherwise would be lost.

Injected into the trunk of the tree, ARBOTECT builds a barrier against Dutch elm disease inside the tree itself. It helps prevent the disease in healthy elms, and can often save infected trees if they are treated early enough.

Used along with sanitation, insect control, and root graft elimination, ARBOTECT can significantly improve the effectiveness of a Dutch elm disease control program.

ARBOTECT differs from other elm fungicides in several important ways:

- It is registered at rates high enough to be effective.
- It is concentrated, requiring much less water for injection, so trees can be treated much faster.
- Thiabendazole, the unique active ingredient in ARBOTECT, is highly effective against *Ceratocystis ulmi,* the fungus that causes Dutch elm disease.
- Even though it is more effective and convenient, ARBOTECT costs about the same to use as other elm fungicides.

This year, put ARBOTECT to work in your disease control program. It's the strongest protection you can give an elm against Dutch elm disease.

Arbotect
Strong protection for elms.

MERCK

Agricultural Products
Merck & Co., Inc. P.O. Box 2000
Rahway, New Jersey 07065
ARBOTECT (thiabendazole) is a registered trademark of Merck & Co., Inc.

Write **157** on free information card

VEGETATION MANAGEMENT

By Roger Funk, Ph.D., Davey Tree Expert Co., Kent, Ohio

Can slag be used as a liming material?

There are several types of materials classified as slags. Basic slag is a product of the basic open-hearth method of making steel from pig iron. It has a relative neutralizing value of 50-70 compared to a value of 100 for calcium carbonate (ground agricultural limestone), although it is generally applied for its phosphorus content rather than for its value as a liming material.

How can you tell ants from termites? We were told by a pest control firm that we have termites.

Termites have two pairs of wings of equal length, no eyes and a thick waist, whereas ants have three distinct body sections. You can obtain a USDA publication from your local cooperative extension agent entitled "Subterranean Termites Their Prevention and Control in Buildings" (Bulletin No. 64). You might also obtain a copy of "Scientific Guide to Pest Control Operations" from Harvest Business Publications, publishers of Weeds Trees & Turf.

Do those Japanese beetle traps really work?

They trap beetles, but I doubt if they significantly reduce the injury to ornamentals or turf unless the home owners in an infested area cooperate in a widespread effort. The traps should NOT be placed near susceptible ornamentals.

What grass would you recommend that could tolerate road salts along highways?

Most of the grasses that are rated as having high salt tolerance are native to the western alkaline soils and may not survive the cold winter temperatures of Pennsylvania.

Tall fescue *(Festuca arundinacea* Schreb) tolerates the low maintenance conditions of roadside planting and has good tolerance to road salts. Alkalai grass *(Puccinellia distans)* has reportedly been found growing in salt-contaminated soils along highways near Chicago and may be hardy in your area.

I want to get into the tree fertilization service using a liquid fertilizer with low salt content. I also want to buy an organic or a slow-release liquid fertilizer to use on turf. My company has a high pressure spray rig. Could you find a reputable company for me?

Boots Hercules Agrochemicals Company, headquarterd in Wilmington, Delaware, produces a powdered ureaformaldehyde (Powder Blue) which releases nitrogen over a two-year period. Since ureaform is not soluble, the spray tank must have sufficient agitation to maintain a suspension during operation.

Powdered ureaform can be used for both trees and turf, but most lawn service companies prefer a shorter release period. Ashland Chemical Company in Columbus, Ohio, produces a liquid source of nitrogen (Formolene 25) which has a lower burn potential than urea and, reportedly, a longer residual. Tests are currently underway to determine the release characteristics.

We have been using a triazine herbicide in our nursery, and I think we are getting some injury. Would you describe the foliar symptoms?

Discoloration of leaves may be white, cream or yellow and is usually marginal with interveinal "fingers" reaching toward the midrib.

What is the difference between "slowly-soluble" and "slow-release" fertilizers?

The terms, slowly-soluble and slow-release, are used to distinguish between the mechanisms of release in the soil of nitrogen in a form available for plant absorption. Slowly-soluble materials require some microbiological and/or soil chemical action before they are available for plant utilization. Examples of slowly-soluble nitrogen fertilizers are ureaformaldehyde and isobutylidene diurea (IBDU). The slow release materials are actually readily soluble or readily available materials that have been coated to restrict contact with soil moisture. Sulfur-coated urea is the most common slow-release source of nitrogen.

What are the apparent effects of planting flowers which prefer an alkaline soil in close proximity to shrubs and trees which prefer an acid soil?

The availability of nutrients in the soil is affected by soil reaction.

Some nutrients become more soluble and, therefore, more available for plant absorption when the soil is acid. The so-called "acid-loving" plants require relatively large amounts of these nutrients and will typically display deficiency symptoms when grown in alkaline soils. For example, iron becomes less soluble or "fixed" in alkaline soils, and plants such as rhododendron that requires relatively large amounts of iron become chlorotic from an iron deficiency.

Conversely, certain plants require relatively large amounts of nutrients that are more soluble in alkaline soils. These plants will not perform well under acid conditions.

Reader response

In response to the February 1980 Vegetation Management column, I received a call from the owner of a golf course in Tennessee who has been able to control bermudagrass in bentgrass greens with Tupersan (Siduron). Similar experiences have been reported in the DuPont publication "Professional Turf Manual." Although I cannot recommend a pesticide for an unlabeled usage, I suggest you contact a DuPont representative or golf course superintendent who has attempted this practice if you would like additional information. Thanks for the tip.

Standard's new Duo-Rake...a real "smoothie" in any sand trap!

For the first time, a trap rake that extra-smoothes sand. Just the way your golfers want it!

Unique Standard Duo-Rake lets user rake out deep footprints, other indentations — then turn rake over and blade out — absolutely smooth — the grooves or ridges that can be a menace to good play.

Golfers find Duo-Rake a delight to use because it's so light-weight and easy to handle.

You'll love Standard's Duo-Rake, too. Because it's so maintenance-free.

Its high-impact molded plastic head is practically in-destructible.

Add to this the no-rust, heavy-duty aluminum handle and chrome-plated 3-inch stand-up spike — and we ask — **how can a rake be more maintenance free!**

Choice of bright yellow or uncoated natural-aluminum-color handle.

Duo-Rake head is interchangeable with head on other Standard Trap Rakes.

The Standard Touch makes the difference.

Why not bring your sand traps up to snuff now?

Contact your Standard Distributor. Or write or phone for new Standard Duo-Rake Bulletin DR-'78. Standard Golf Company, 220 East Fourth Street, Cedar Falls, Iowa 50613. 319/266-2638.

STANDARD GOLF Pro-Line

DOW
DURSBAN
INSECTICIDE

WHY 9 OUT OF 10 LEADING LAWN CARE FIRMS USE DURSBAN
When the top 9 of 10 lawn care firms in America all choose DURSBAN* brand insecticides as their predominate insecticides for surface insect control...there has to be a good reason. Or two.
Well there are two.
1. DURSBAN insecticides last longest of all leading insecticides.
2. DURSBAN insecticides cost less to use than other leading insecticides.
In fact one application of DURSBAN 4E, ¾ oz. per 1,000 sq. ft., costs only about 45¢. Yet with this small amount, you get six to eight weeks of unsurpassed residual control of dozens of turf pests. Compare this to two to four weeks with any of the other leading insecticides.
And although DURSBAN insecticides are highly effective against insects, they are kind to turf, to people and to pets.
You also use a lower dosage rate with DURSBAN than with other leading insecticides. That means you handle fewer drums to do the job.
So ask your supplier for the turf insecticide that saves you time, trips, storage space and money. Ask for DURSBAN 2E insecticide or double-strength DURSBAN 4E insecticide.
Just be sure to read and follow all label directions and precautions. Agricultural Products Department, Midland, Michigan 48640.
Dow
DOW CHEMICAL U.S.A.
*Trademark of The Dow Chemical Company
Circle 125 on free information card

SOD PRODUCER NEWS

Turfgrass ranks high in Oklahoma's economy

Usually considered a land of cattle and wheat, Oklahoma's turfgrass production ranks right behind the two major crops in the state's agricultural economy.

Specialists Wayne Huffine and Roy Sturgeon at Oklahoma State University draw this claim from a recently published Oklahoma turfgrass survey which shows dollars from turf production, establishment, and management during the survey year, 1977, amounted to more than $258 million. Below the turfgrass figure were hay at $195 million and milk at $113 million.

Fertilizer producers show big increase

U.S. fertilizer producers registered a 14 percent increase in domestic disappearance for the first six months of the 1979-80 year compared to July-December 1978, according to a report of The Fertilizer Institute. During the same period, U.S. fertilizer production averaged seven percent above the last six months of 1978.

"Much of the domestic disapperance from the producer likely occurred as shipments to retailer inventory, as dealers built stocks for early spring sales," explained Edwin M. Wheeler, president of The Fertilizer Institute. "In December 1979, fertilizer disappearance from producers was 24 percent above December 1978, with the increase applying broadly to nearly every nitrogen, phosphate, and potash product listed in the institute's fertilizer index," he added.

"Meanwhile, producer-held fertilizer inventories at the end of December dropped 24 percent below December 1978 to record low levels," Wheeler said. Several key products have stocks equivalent to only about three weeks of production, significantly below typical working levels of at least a month's production. "Among the basic fertilizer materials," said Wheeler, "only phosphoric acid had producer inventories equal to or above last year's levels."

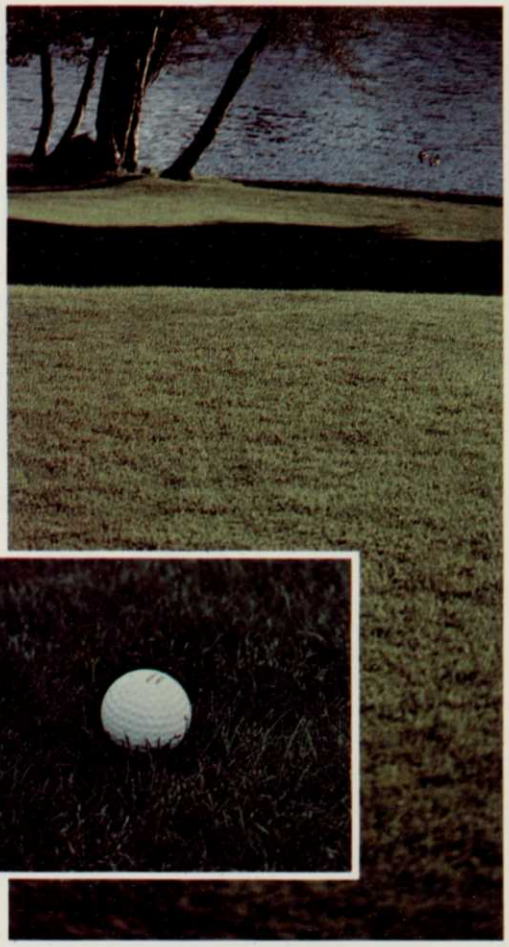
Jacklin Seed plans large expansion

Jacklin Seed Co. of Post Falls, ID, is gearing up for its biggest production and marketing year with an expansion program that includes construction of a building believed to be the largest single unit in northern Idaho.

Doyle Jacklin, marketing manager for the company, said the expansion program would almost double the present warehouse and processing capacity.

OREGON FINE FESCUES
The Park and Golf Course Grass

The fine fescues, both Chewings type (doesn't creep) and the Red type (creeping) are favorites of golf course and park superintendents for several very good reasons. The fine fescues tolerate poor soils and have low water requirements compared with other type grasses. They take less fertilizer for maintenance and the fine fescues take the wear in parks and golf course fairways. Mix with other grasses or use it straight . . . the fine fescues make great turf for just about anywhere.



CHEWINGS AND CREEPING RED FESCUE COMMISSION
1349 CAPITAL ST NE • SALEM OR 97303

QUALITY GRASS SEED FROM OREGON

Circle **133** on free information card

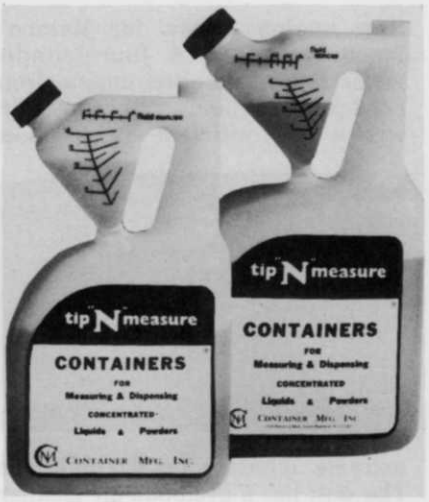
PRODUCTS

Slope Master by Kut-Kwick cuts slopes up to 40 degrees due to its low center of gravity. Powered by a

23 h.p. gasoline engine, the unit has dual tractor wheels for added traction and stability. The mower cuts a 60-inch swath and up to three acres per hour.

Write 701 on free information card

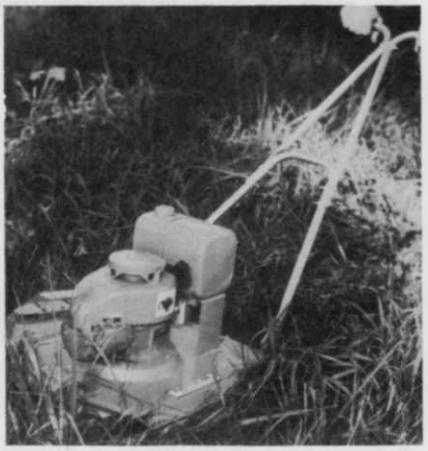
Tip N Measure by Container Manufacturing Inc. eliminates the need for a second measuring device by its integrally molded and calibrated head. The container is closed for initial measurements, volume recheck, and addition or subtraction of material thus providing safety and minimizing accidental spillage. The con-



tainers are available in one and two quart and one gallon sizes.

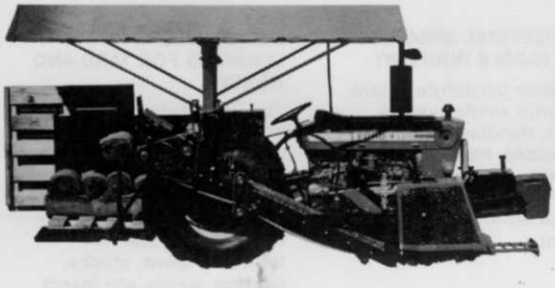
Write 702 on free information card

Chieftan Mower by Clinton has the power to cut any height of grass with its 5.5h.p. two-stroke engine. Features such as ball bearing wheels, heavy-duty blade clutch, below deck muffler discharge, and



snorkle air cleaner kit for dust protection give professionals what they want. Available in 20- and 22-inch

Cut, Roll, Slab or Fold, 24 hours a day, wet or dry weather, all sod conditions.



With a Brouwer Harvester you do it all with time and money saving efficiency.

Over 1000 Top Turf men around the world use Brouwer Harvesters to assure themselves of top profit.

The Brouwer line of Harvesters is engineered by a Turf Grower for Turf Growers. **They're economical to acquire, labour saving, and they eliminate waste.** Available in 15, 16, 18 and 24 inch widths and a choice of pallet sizes.

You get a more uniform cut, less down time, less top soil removal, and a harvester that operates off the uncut turf. Brouwer Harvesters are easy on your sod. Write for our free Harvester brochure.

BROUWER

The Turf Equipment People

Brouwer Turf Equipment Limited, Woodbine Ave., Keswick, Ontario, Canada L4P 3E9 Tel: (416) 476-4311

Write **122** on free information card

models with a three or five quart fuel tank.

Write 703 on free information card

Controlled release packet by Unique Fertilizer Inc. provides nutrients for up to eight years when placed near the roots of a plant or tree. The sealed polyethylene bag, containing

a water soluble fertilizer of at least 16-8-16 analysis, slowly releases nutrients through micropore holes. Originally developed by soil scientists at the University of Wisconsin, the packets release only the amount of fertilizer needed during the season.

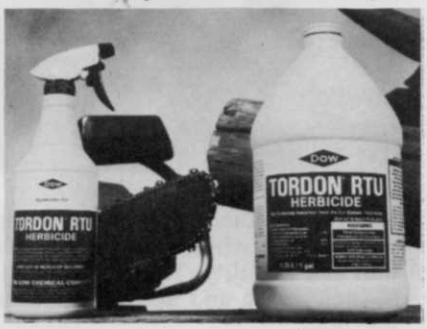
Write 704 on free information card

New engine option for Reinco's Power Mulcher. A four-cylinder water cooled gasoline engine from Ford provides landscape contractors with a more efficient engine under

extreme environmental conditions. The unit has a cyclopac air cleaner, full cowl enclosure with instrumentation and an hour meter for monitoring usage. It is capable of placing four tons of hay or straw per hour at distances of up to 60 ft. utilizing two men.

Write 707 on free information card

Tree stump treatment and cut-surface treatment with Dow's Tordon herbicide is possible with a ready-to-



use formulation packaged in a convenient squeeze trigger applicator bottle. Tordon RTU is the only product in the line of Tordon herbicides that is not a restricted use pesticide and can be used by persons without special licensing. One gallon will

BIG TREES are BIG BUSINESS

YOU have an opportunity to get in on the profits.

- *The demand for big-tree planting is increasing;*
- *Contractors in the business are earning $50,000 to $100,000 annually;*
- *BIG JOHN is the world's biggest patented tree spade.*

Find out how you can own or lease a BIG JOHN and capture the big-tree business in your area. We'll send an investment prospectus and arrange for a demonstration.

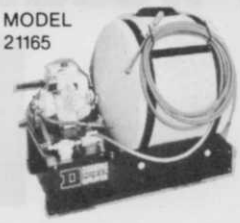
Gerald Bredlau
11114 Haycreek Rd
Pittsville, WI 54466

Call toll-free (800) 826-4877
In Wisconsin call (715) 884-2824

Write **141** on free information card

DEPENDABLE SPRAYERS FROM DOBBINS

MODEL 21165



MODEL 1072

COMMERCIAL SPRAYERS FOR FARM & INDUSTRY

65-gallon polyethylene tank. Powerful single cylinder pump. Handles all types of pesticides, herbicides, soluable fertilizers and disinfectants. Can be converted to trailer hitch mount.

POLYETHYLENE TANK SPRAYERS FOR YARD AND GARDEN

The Polyethylene Tank is sturdy, noncorrosive and light weight. Centrifugal pump has just one moving part. Designed to meet the budget and needs of the suburban homeowner. Ideal for fertilizing lawns, shrubs, gardens, weeds and insect control.

See your jobber or write:

MASTER MANUFACTURING CO.
P.O. Box 694, Sioux City, IA 51102
Call (712) 258-0108

DOBBINS SPRAYER

Write **128** on free information card

treat from 300 to 800 stumps, depending on their size.

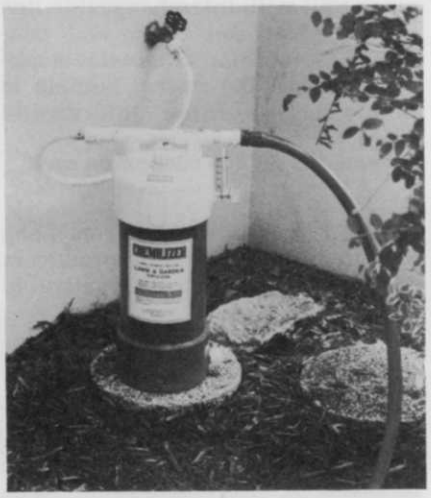
Write 708 on free information card

Compact riding trencher from Ditch Witch Division of Charles Machine Works offers the compactness of a handlebar trencher and the convenience of a riding trencher. The 1810 is built on a rigid one-piece frame

and has a 20,000 lb. test digging chain. It provides hydrostatic ground drive to all four wheels and will dig to depths of five ft. and to widths of 12-in.

Write 709 on free information card

Fertilizer injector for hose or underground sprinkling systems by Chemilizer Products Inc. connects to the water supply with standard hose fittings and injects a calibrated amount of fertilizer into the sprin-



kler system. It uses a liquid fertilizer available in two and four-gal. sizes. Made of lightweight molded plastic, the Chemilizer can be easily moved to different locations. In underground systems chemicals are injected after the pump system to prevent corrosion. The unit can be bypassed for flushing lines following use or for straight irrigation.

Write 711 on free information card

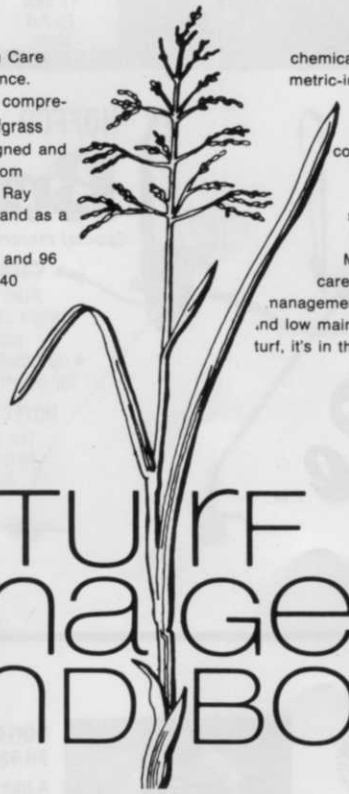
Webbed windbreak from V & V Noorrdland Inc. can be used as a windbreak around greenhouses, orchards, nurseries and landscapes or as a shading material. The webbing is made from two-in. wide straps of coated yarn. It can be erected quickly and easily relocated. Benefits include protection from storm damage, rapid temperature variation and evaporative losses by plants, and prevention of energy loss from greenhouses.

Write 710 on free information card

Wild flower mix from Lofts and Jacklin seed Cos. reseeds itself annually and requires almost no maintenance. A blend of annuals and perennials, Pinto Wild Flower Mix can be planted alone or with grass

Finally, An Aid For Teaching Turfgrass

Superintendents, Contractors, Lawn Care Managers, New, On-the-Job Reference. The Turf Managers' Handbook is a comprehensive, organized approach to turfgrass science and care. It has been designed and written by leading turf specialists from Purdue, Dr. William Daniel and Dr. Ray Freeborg, for on-the-job reference and as a text for students.
The book contains 150 illustrations and 96 color photographs. Data includes 240 tables and forms. Included are specifications for rootzones, employment, calculations for chemical applications, and extensive metric-imperial conversion. Business and technical aspects of turfgrass management are covered in this 424-page book. Planning, purchasing, hiring, construction, and plant selection are put together for easy on-the-job reference. Markets covered include lawn care, sod production, golf course management, cemeteries, athletic fields, and low maintenance areas. If it concerns turf, it's in the Turf Managers' Handbook.



TURF managers' HANDBOOK

Ordering Information

Please send _____ copies of the hardback ($18.95 ea.)
_____ copies of the paperback ($14.95 ea.)

A shipping charge of $1.25 per book must be added.
A check or money order for _____ is enclosed.
Please charge to my VISA or MASTER CHARGE (circle one)
account no. _____, expiration date _____

I understand that delivery may take six to eight weeks.
Quantity and bookstore rates available upon request.

Signature _____
Name (Print) _____
Address _____
City _____ State _____ Zip _____

Send to:
Books Department
Business Publications Division
Harvest Publishing Company
9800 Detroit Ave.
Cleveland, OH 44102

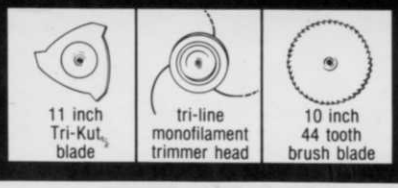
HARVEST

HOFFCO ™
Whizz Witch

A tough 85cc engine stands behind trimming head and 2 cutting blades.

- Tri-line, heavy duty monofilament trimmer head.
- 11″ Tri-Kut weed blade cuts heavy weeds, briars and brambles.
- 10″ 44 tooth brush blade (optional) cuts up to 3″ diameter saplings at ground level.

HOFFCO-P10-A
BRUSHCUTTER/POWER SCYTHE
Offers the same equipment package, but the trimmer head is optional.



The 2 cycle, 22.5cc engine, can be operated in any position. Total wgt. 13½ lbs.

1. Monofilament trimmer head
2. 8″ Tri-Kut blade
3. (optional) 8″–44 tooth brush blade

HOFFCO
Brushette T.M.
Special merchandising displays available.

CHAIN SAW ATTACHMENT
Also attaches easily to most lightweight chain saws. • 8″ Tri-Kut weed blade • 8″ 44 tooth brush blade • optional monofilament trimmer • Use for overhead tree and brush trimming.

HOFFCO'S "HUMAN ENGINEERING"
The carrying harness and handlebars with anti-vibration grips can be adjusted for the comfort, balance and separates operator from cutting and trimming heads.

HOFFCO
genie T.M.

HOFFCO
PH 980
A true ONE MAN post hole drill Full wrap-around handles *deadman throttle control and kill switch on handle *Comet auto *centrifugal clutch *18.1 power ratio 2 to 8″ earth bits *8″ ice bit available. Drill to 30″ (4′ with extension accessory).

HOFFCO PH 1200-A 2-man
4-cycle engine. Special throttle control and auto. centrifugal clutch.

Write for free brochures & name of Distributors in your area . . .

DEPT. WTT-480 • 358 N.W. "F" STREET • RICHMOND, IN 47374

Write **126** on free information card

Products

from page 87

seed to enhance any landscape setting. Available in one-acre bags or one-ounce packages (700 sq. ft.) Perfect for a low maintenance landscape where color is desired.

Write 712 on free information card

Soil probe by Oakfield Apparatus is an easy-to-use soil sampler probe which can extract a 12-in. core for soil testing. Made from chrome-

plated steel, the device is a one-piece unit with interchangeable tips for different soil types and conditions. A foot step eliminates stooping to insert the probe. Sample is removed by turning unit upside down.

Write 713 on free information card

Mobile irrigation system from Long Manufacturing offers sod producers and nurserymen an alternative to

underground irrigation systems. The Nu-Way irrigation units carry up to 835 ft. of hose and are available with water turbine or gasoline engine power.

Write 715 on free information card

The height of confidence for consistent yellow nutsedge control.

It takes consistent performance to earn the confidence of turf professionals. And no herbicide ever provided more consistent yellow nutsedge control than Basagran® herbicide, leaving established turf green and healthy.

BASF Wyandotte Corporation
Agricultural Chemicals Division
100 Cherry Hill Road
Parsippany, New Jersey 07054

BASF

For consistent yellow nutsedge control. Basagran every time.

For more information, write or call our nearest Regional Office:
5720 W. 85th Street, Suite 16, Indianapolis, Indiana 46278, (317) 299-4122
6263 Poplar Avenue, Suite 850, Memphis, Tennessee 38138, (901) 761-2001
6405 Metcalf, Suite 317, Shawnee Mission, Kansas 66202, (913) 677-2424

Circle **173** on free information card

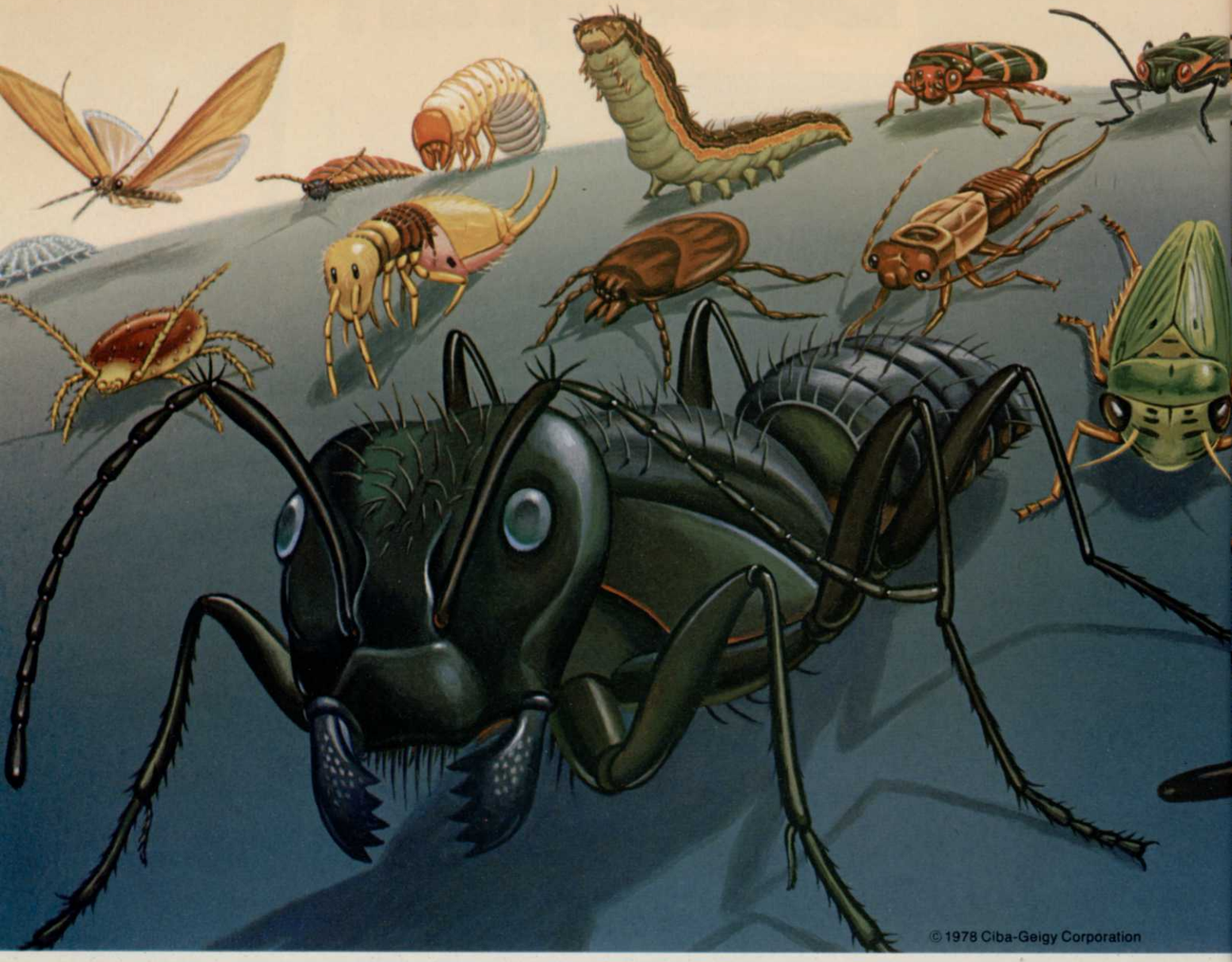
Follow label instructions.

Diazinon is labeled for
How many will you

Diazinon® not only controls, but is labeled for more turf insects than any other turf insecticide.

Just take a look, it's the biggest label in the business.

You'll count 24 turf insects in all. Including white grubs, sod webworms, cutworms, chinch bugs,



© 1978 Ciba-Geigy Corporation

every insect on this page. face this season?

armyworms and ants.

This season, be sure to ask your local supplier for Diazinon.

And put the biggest label in the business to work for you.

Ciba-Geigy, Ag. Div., Box 11422, Greensboro, NC 27409

Diazinon by CIBA-GEIGY
The biggest label in the business.

Write **164** on free information card

CIBA–GEIGY

CLASSIFIEDS

When answering ads where box number only is given, please address as follows: Box number, c/o Weeds Trees and Turf, Dorothy Lowe, Box 6951, Cleveland, Ohio 44101.

Rates: All classifications 65¢ per word. Box number, $1. All classified ads must be received by Publisher the 5th of the month preceding publication date and be accompanied by cash or money order covering full payment. Mail ad copy to: Dorothy Lowe, Weeds, Trees & Turf, P.O. Box 6951, Cleveland, Ohio 44101.

USED EQUIPMENT

HI-RANGER 54' and other aerial buckets. 2 Asplundh brush chippers, Prentice hyd. loader, chipper truck, John Bean 20 g.p.m. sprayer, 4 & 9 ton tag-along trailer. Allied Enterprises, Inc., W204 N11509 Goldendale Rd., Germantown, Wi. 53022. Phone 414 255-6161.

HI-RANGERS AERIAL BASKETS 65', 57', 53'. Skyworkers aerial baskets 65', 50', 40'. Vermeer stump cutter 1560, 6. Vermeer tree spade 66, TS 44. Asplundh bucket and brush chippers. Bean sprayer, 9 ton trailer. Parkway Tree Service, 12026 W. Cherry, Wauwatosa, Wisc. 53226. 414 257-1555.

1979 LEVCO stump grinder. Less than 75 hours. Good condition. 616 698-8008.

FOR SALE: 78 inch Big John tree mover, serial 32 in good condition, original owner. Trees, Inc. 517 627-9155.

NETSETTER "ROBARK", like new, used on 40 acres. P.O. Box I, Sumner, WA 98390. 206 825-2403.

FOR SALE: Nunes turf harvester. 18" x 72" Rolls. Purchased new August 1, 1978 for 33,000.00. Current model. With mower attachment. $18,000.00. Call 503 422-7204.

FOR SALE: We specialize in the design and manufacture of heavy duty right-of-way and turf spraying equipment. We will quote on chassis and spray equipment or spray equipment only. Also distributor for hose, reels, pumps, winches and herbicides. K. W. Reese, Inc., Box 298, Mercersburg, Pennsylvania 17236. 717 328-5520.

FINN HAY MULCHER 1972: Gas engine, tow behind, self loading, excellent condition. $5800.00.—Bowie hydromulcher: 1500 gallon capacity, Ford industrial engine, bale shredder, on low bed trailer, good condition. $6500.00.—Anderson stone picker, tractor drawn, hydraulic lift, good condition. $2200.00.—JD 300B loader backhoe, 1975, ¾ yard front bucket, 24" backhoe bucket, complete 3 pt. hitch attachments with wet line, reverser transmission, roll bar, loader used only 1000 hours, backhoe like new. $14,800.00. 215 233-4779.

FOR SALE: Brouwer sod harvester (24 in.), excellent condition. Phone 313 887-4937.

FOR SALE: 12" 4 cylinder Mitts & Merrill, fully reconditioned, $2,595.00. 12" Asplundh, needs a motor, $1,495.00. Model 15 Mobark shear with Balderson quick-coupler, $4,495.00. 1974 Case 450 with 4 in 1 bucket, $11,995.00. Edwards Tree Service, 49090 Cooper Foster Park Road, Amherst, Ohio 44001. Phone 216 988-4477.

FOR SALE: Roseman 5 & 7 gang sharpened. 3 gang Torro, $600. Sod cutter with roll Ryder, $1300. 414 326-5267.

FOR SALE: TORO SPARTAN 7—7 gang mower, excellent condition. Phone: 609 859-2400.

STUMP GRINDER, Levco T.M.-540, 13 inch cut. Used very little. Alan E. Dambach, Lake Forest Gardens, Inc., Fombell, Pa. 16123. Phone 412 758-5706.

FLAIL SAFE

Flail type mowers have a reputation for being safer than rotary type mowers. Mott Mowers... with their lightweight knives... are the safest of the flails.

More **VERSATILE** in mowing performance, Mott Mowers cut everything from fine lawns to high weeds.

More reliable, with long life durability, Mott Mowers offer **COST EFFECTIVE PERFORMANCE.**

Write or call for information about **YOUR MOWING REQUIREMENTS.** Mow flail safe... with Mott Mowers.

Mott Interstater® 3 Gang mower cutting 18'10" swath. Smaller sizes available: 38", 48", 60", 72", 74", and 88". Also various gang combinations.

"Tell me more about FLAIL SAFE mowing."

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

PHONE _____

mott® HAMMER KNIFE®

MOTT CORPORATION

514 Shawmut. La Grange, Illinois 60525. (312) 354-7220

Write **159** on free information card

TREE TRUCKS (24), 1970-72 GMC, 5500 series with crew cabs and dump, chip boxes, V6 engine, 4 speed transmission. Fair to rough condition. 1400 to 2800. Opdyke's Auto Sales, Rt. 309, Colmar (Phila.), PA 18915. Phone 215 822-8300.

1 JOHN BEAN 300G, rotomist sprayer, $5,500.00. 1 John Bean 303G, rotomist sprayer, $7,500.00. Both in excellent condition. Fowler Tree Surgery Co., P.O. Box 546, Elgin, Illinois 60120. Phone 312 741-0435.

SEEDS

SOD QUALITY Seeds: Adelphi, Glade, Cheri, Nugget, Merion, Fylking, Majestic, Baron & Touchdown bluegrasses, also fine fescues. Manhattan ryegrass. Custom mixing available. Michigan State Seed, Grand Ledge, Michigan 48837. Phone 517 627-2164.

LAWN SEED. Wholesale. Full line of top quality grasses. Improved bluegrass varieties, fine fescues and fine bladed ryegrasses. We specialize in custom mixing. Oliger Seed Company, 2705 Wingate Avenue, Akron, Ohio 44314. Call collect 216 753-2259.

TURF GRASS SEEDS. All improved varieties suitable for Canadian conditions, custom mixtures, and Prill-On coated seeds. Oseco, Inc., P.O. Box 219, Brampton, Ontario, Canada, L6V 2L2. Phone 416 846-5080.

HELP WANTED

TURF SPECIALIST/MANAGER TRAINEE positions open at expanding chemical lawn and shrub care company in fast growing Houston, Texas. Tremendous opportunity for those having experience with national or regional lawn care companies, or knowledge of turfgrass and ornamental plants. The right people will have unlimited advancement potential. Send complete resume including education, experience and salary history to: Environmental Lawn Care, 7544 Harwin, Houston, Texas 77036 or call collect 713 784-1750.

EXPERIENCED SPRINKLER SYSTEM installer and maintainer to join forces with nursery and landscape maintenance company. Person would work salary plus percentage, should be able to handle the job from bidding to finish, to maintenance. Phone 303 (Colorado) 476-3047. Voliter Landscaping, Vail Colorado.

FOREMEN WANTED. Landscape formen: Responsibilities include proper installation of plant material and landscape features, including grading, correct use and care of equipment and the supervision of crews. Successful applicants will have 1 to 3 years of experience in the landscaping industry, with at least 1 year in supervisory capacity and knowledge of reading blueprints. — Landscape maintenance foremen: Responsibilities include proper care and maintenance of plant material (i.e. fertilizing procedures, spraying, mowing, pruning and cultivation); correct use of equipment and supervision of crews. Successful applicants will have 1 to 3 years of experience in landscape maintenance, with at least 1 year in supervisory capacity. These are year-round positions with excellent starting salaries and full company benefits. If you feel you are qualified for one or more of these positions are an ambitious, self-motiviated, knowledgeable individual who enjoys a challenge and takes pride in work, then you are the one we are looking for. Please contact our office immediately. Bob's Green Thumb Landscaping Co., Inc., R.R.1, P.O. Box 131, Mundelein, Illinois 60060. 312 634-9300.

IRRIGATION TECHNICIAN — Exp'd irrigation technician needed for centrifugal and turbine pump systems and related irrigation systems. Send resume to: B.W.M.A. Inc., P.O. Box 100, Boca Raton, Florida 33432 or call 305 368-9200 ext. 528/522.

LANDSCAPE SALESMAN WANTED: An experienced super salesman wanted, with a background in landscape sales and knowledge of plant material. Responsibilities include negotiating with architects, developers and contractors to secure landscape construction contracts. Salary and/or commission plus company benefits. If you are ambitious, self-motivated and a knowledgeable individual who enjoys a challenge and takes pride in accomplishments, you are what we are looking for. Please contact our office immediately. Bob's Green Thumb Landscaping Co., Inc., R.R. 1, Box 131, Mundelein, IL 60060. 312 634-9300.

AWARD WINNING LANDSCAPE CONSTRUCTION COMPANY in Long Island, New York has immediate positions in the following areas: Seniro Management — responsibilities include scheduling and supervision of 4-6 crews and complete coordination of landscape construction projects. Successful applicant will have 4 years minimum experience. Landscape Foreman—must be familiar with landscape construction and planting, able to read blueprints. Must have at least 2 years in a supervisory capacity. Arborist—experienced to head tree division, capable of estimating sales, supervise tree work and spraying. Landscape Designer-Draftsman—residential and commercial projects, progressive office strong in design. Extensive company benefits, including pension plan. Send resume to: Box 226, Centerport, New York 11721.

TURFGRASS AND LANDSCAPE MANAGEMENT: Obtain the expertise to start and/or manage a landscaping or lawn care business. For information contact: The Institute of Applied Agriculture, University of Maryland, College Park, MD 20742, 301 454-3938.

LEADING commercial flail mower manufacturer has job openings for direct factory Territory Managers. Travel for sales and service with demonstration promotion required. Salary, profit sharing, car and travel expenses. Send resume to: Box 238, Weeds, Trees and Turf, Box 6951, Cleveland, Ohio 44101.

TREE SURGEON: 4 years experience or more. Good pay with excellent benefits for top-notch, professional climbers. Fast growing, well established firm has immediate openings for men experienced in residential trimming and removal. Holcomb Tree Service, 10625 Ferguson Road, Dallas, Texas 75228. 214 327-9311.

FOR SALE

FOR SALE: Tree/lawn sprayer components, all new; 1-Bean 20-20 500 psi pump, 1-Kohler cast iron 12 h.p. electric start, 1-275 gallon s.s. tank. $1500. w/used hose and guns. P.O. Box 548, N. Kingstown, RI 02852. 401 294-6397.

TWO BOWIE HYDRO-MULCHERS, one 1500 gallon and one 1000 gallon with trailer, both in good running condition. Hydro Lawns, Inc., P.O. Box 59413, Dallas, Texas 75229. 214 241-2271.

FOR SALE: Small spray business — Greater Pittsburgh area. Established repeat customers 4 years and over. Includes 300 gallon Myers sprayer on road axle. Chemical inventory, new pump. Referrals and customer list. Saber Tree Service, 511 Robinson Ave., Roaring Spring, Pa. 16673. 814 224-2613.

SPRAYERS—FACTORY DIRECT, professional gardeners, turf applicators, proven dependability, unconditionally guaranteed. Black River Sprayers, Box 824, Andrews, S.C. 29510.

BUSINESS OPPORTUNITIES

WANT TO BUY OR SELL a golf course? Exclusively golf course transactions and appraisals. McKay Golf & Country Club Properties, 15553 N. East St., Lansing, Michigan 48906. Phone 517 484-7726.

LEARN LANDSCAPING and the growing of plants at home. Start a satisfying business or hobby. Free booklet. Lifetime Career Schools, Dept. A-824, 2251 Barry Avenue, Los Angeles, Ca. 90064.

VAIL, COLORADO — Nursery and Landscape Contracting Company for sale. Year around business with snow plowing in winter. Inventory includes 7 trucks and 2 loaders. Very growing business in very growing area. Phone 303 476-3047 ask for Bob.

WANTED TO BUY

WANTED: Used older truck and hydraulic loader, good condition. 303 623-2658.

USED LINDIG OR ROYER soil shredders, 50 yards an hour or larger. Art Lewis, Lewis Equipment Co., 320 3rd Street S.W., Winter Haven, Fl 33880. Phone: 813 294-5893.

WANTED: Light duty landscape rake. 703 552-0234.

REAL ESTATE

BOARDMAN, OREGON AREA FARM — 2,000 total acres, 1,400 irrigated. $1,000,000 inventory Bluegrass instant lawn on 400 acres. Pacific northwest's fastest growing turf farm. Excellent orchard potential, broad crop spectrum, lower Columbia River basin, deep soils. All for $2,100,-000.00. For details write Earth Carpet

Classifieds

from page 93

Turf, P.O. Box 233, Ione, Oregon 97843 or call 503 422-7204.

IRRIGATION

SUBMATIC trickle/drip irrigation saves water and labor. We have total line all parts/pipe engineering. Mitchell Seed and Grain Co., Roswell, N.M. 88201.

MISCELLANEOUS

KELWAY SOIL pH TESTER, used by professionals everywhere. Direct reading, longlasting, portable, lightweight, no power source. Model HB-2 reads moisture too. Available through local distributors or contact Kel Instruments Co., Inc., Dept. W, P.O. Box 1869, Clifton, N.J. 07015. 201 471-3954.

NEW—THE WICK-IT WEEDKILLER. Lightweight hand-held wick applicator. No spray, no drift, low herbicide usage. Johnson grass and other weeds growing among desirable plants. Perfect for grounds. $29.95 plus $2.00 for handling. Send for brochure. Plant Production, Rt. 7, Box 441E, Fort Worth, Texas 76119.

GUIDE TO 50 best urban tress for temperate climates. Includes most detailed ratings yet available for 30 tree characteristics such as salt, air pollutants, and pavement tolerance, leader and crotch development, decay susceptibility. Researched and compiled by: James M. Rubens, Urban Forestry Consultants, 147 South Main Street, White River Junction, Vermont 05001. Send $15.00 with order to author.

YOUR SOURCE FOR REFERENCE BOOKS

Harvest Business Publications can obtain nearly any publication on landscape horticulture. If you have been looking for a particular book without success, let us find it for you. Write Fran Franzak, Harvest Business Publications, 9800 Detroit Ave., Cleveland, OH 44102.

We'll Find Your Book!

Save 50% on labor costs.

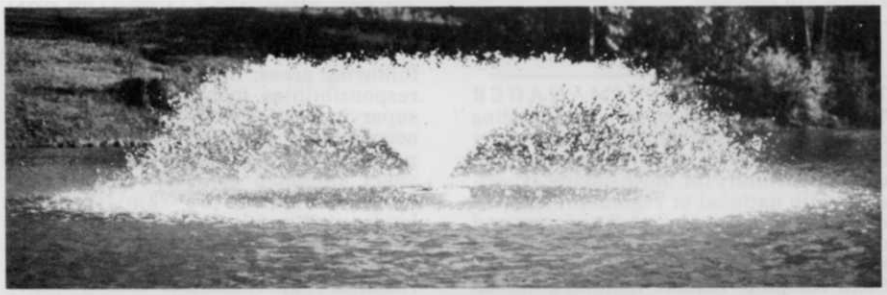
Jobe's Tree & Shrub Spikes provide proven, efficient feeding. Eliminate any special tools. Furnish extra income for lawn care customers.

Call 1-800-354-9360 for the name of your nearest distributor.

Jobe's TREE & SHRUB SPIKES

The easy method for professional tree care.
International Spike, Inc.
P.O. Box 1750
Lexington, KY 40593

Write **114** on free information card



OTTERBINE
Spray Sculpture Floating Fountains. Now you can clean up ponds and lakes naturally.

These self-contained water quality improvement systems help you keep unsightly algal growth and objectionable odors under control naturally, without costly chemicals.

And their sparkling spray displays may dramatically change the natural beauty of your ponds and lakes.

For the Otterbine dealer in your area contact:

OTTERBINE

576 North St., Emmaus, PA 18049 • 1-215-965-6990

Write **175** on free information card

WT&T

EVENTS

The current issue of WEEDS TREES & TURF carries meeting dates beginning with the following month. To insure that your event is included, please forward it, 90 days in advance, to: WEEDS TREES & TURF Events, 9800 Detroit Ave., Cleveland, OH 44102.

Tree Care—Urban Forestry Foreman Training, Kent, OH, **Apr. 7-18; June 2-13;** and **Sept. 15-26.** Contact Richard E. Abbott, Davey Environmental Services, 117 South Water Street, Kent, OH 44240, 216/ 673-9511.

2nd Exhibition for Horticulture and Landscape Construction, "Gruen 80," Basel, Switzerland, **Apr. 12-Oct. 12.** Contact Beat Baechler, 104 South Michigan Ave., Chicago, IL 60603, 312/641-0050.

Southeastern Turfgrass Conference, Georgia Coastal Plain Station, Turf Plot Farm, Tifton, GA. **Apr. 15-15.** Contact George M. Kozelnicky, Dept. of Plant Pathology & Plant Genetics, University of Georgia, Athens, GA 30602, 404/ 542-2571.

Tri-State Seminar, Mississippi Chapter of the American Society of Landscape Architects, Mississippi Gulf Coast, **April 24-27.** Contact Gerald R. Barber or Thomas H. Eaves, Associated Planning Group, Inc., P.O. Box 607, Canton, MS 39046.

Management Information Systems Seminar, Miami, FL, **May 13-14.** Contact John Shaw, Executive Director, ALCA, 1750 Old Meadow Rd., McLean, VA 22101, 703/821-8611.

American Society of Golf Course Architects, Glen Eagles Hotel, Scotland, **May 15-24.** Contact Paul Fullmer, Executive Secretary, 221 N. LaSalle St., Chicago, IL 60601, 312/372-7090.

Texas A&M University Turfgrass Research Field Day, TAMU Turfgrass Field Lab, Agronomy Road, TAMU Campus, College Station, TX, **May 21.** Contact Dr. Richard Duble or Dr. James Beard, Dept. of Soil & Crop Sciences, Texas A&M University, College Station, TX 77843.

Fertilizer Institute Marketing Conference, The Greenbriar Hotel, White Silver Springs, WV, **June 8-11.** Contact Barbara Schoen, The Fertilizer Institute, 1015 18th St., NW., Washington, DC 20036, 202/466-2700.

Kentucky Cemetery Association Annual Meeting, Executive Inn, Louisville, KY, **June 12-14.** Contact Lewis C. Tingley, Resthaven Memorial Park, P.O. Box 18066, Louisville, KY 40218, 502/491-5950.

NRPA National Forum for Board/Commisssion Members, Bettendorf, IA, **June 12-15.** Contact Ted Flickinger, NRPA, 600 E. Algonquin Rd., Des Plaines, IL 60016, 312/297-6260.

Residential Landscape Design Course I, Milwaukee, WI, **June 18-20.** Contact John Shaw, Executive Director, ALCA, 1750 Old Meadow Rd., McLean, VA 22101, 703/821-8611.

Metropolitan Tree Improvement Alliance papers on "Urban Trees and Their Soils," Rutgers University, New Brunswick, NJ, **June 18-20.** Contact Dr. David F. Karnosky, Cary Arboretum, Box AB, Millbrook, NY 12545, 914/677-5343.

26th Grass Breeders Work Planning Conference, Utah State University, Logan, UT, **June 18-20.** Contact K.H. Asay, Research Geneticist, Crops Research Laboratory, U.S.U.UM63, Logan, UT 84322.

Residential Landscape Design Course I, Tucson, AZ, **June 23-25.** Contact John Shaw, Executive Director, ALCA, 1750 Old Meadow Rd., McLean, VA 22101, 703/821-8611.

Lawn Institute Annual Meeting, Del Coronado Hotel, San Diego, CA, **June 23.** Contact Robert W. Schery, Director, 991 W. 5th St., Marysville, OH 43040, 513/642-1777.

American Seed Trade Association, Del Coronado Hotel, San Diego, CA, **June 23-25.** Contact Dr. Harold D. Loden, Executive Vice President, Turfgrass Div., 1030 15th St. NW, Washington, DC 20005, 202/223-4080.

Dutch elm disease training course, Sault Ste. Marie, Ontario, **June 23-26.** Contact Dr. Peter F. Rice, c/o Royal Botanical Gardens, Box 399, Hamilton, Ontario, Canada. L8N 3H8, 416/527-1158.

University of Massachusetts Field Day, South Deerfield Plot, South Deerfield, MA, **June 26.** Contact Dr. Joseph Troll, Dept. of Plant and Soil Science, Stockbridge Hall, Amherst, MA 01003, 413/545-2353.

Residential Landscape Design Course II, Phoenix, AZ, **June 26-28.** Contact John Shaw, Executive Director, ALCA, 1750 Old Meadow Rd., McLean, VA 22101, 703/821-8611. .

Niagara Falls Convention & Trade Show, Niagara Falls Convention Center, Niagara Falls, NY, **June 30-July 3.** Contact Margaret Herbst, Executive Secretary, NY State Nurserymen's Assn., Inc., 101 Park Ave., New York, NY 10017.

American Association of Nurserymen's 105th Annual Convention and Trade Show, Radisson Muehlebach Hotel, Kansas City, MO, **July 13-16.** Contact Harry C. Kiely, Administrator, American Association of Nurserymen, Inc., 230 Southern Building, 15th & H Streets, N.W., Washington, DC 20005, 202/ 737-4060.

Aquatic Plant Management Society annual meeting, Sarasota Hyatt House, Sarasota, FL, **July 13-16.** Contact International Plant Protection Center, Oregon State University, Corvallis, OR 97331.

American Sod Producers Association summer convention & field days, Four Season Hotel, Alberta, Canada, **July 20-22.** Contact ASPA, Bob Garey, Executive Director, 9th & Minnesota, Hastings, NE 68901, 402/463-4683.

Penn Allied Nursery Trade Show, Hershey Convention Center, Hershey, PA, **July 29-31.** Contact S. Howard Davis, Executive Director, Pennsylvania Nurserymen's Assn., 234 State St., Harrisburg, PA 17101, 717/238-1673.

Southern Nurserymen's Trade Show, Atlanta Convention Center, Atlanta, GA, **Aug. 2-6.** Contact Tommy Henegar, Southern Nurserymen's Assn., 3813 Hillsboro Rd., Nashville, TN 37215, 615/383-5674.

Roadside Vegetation Management and Manipulation Program, San Antonio, TX, **Aug. 4-8.** Contact Charles T. Edson, Assistant Chief Engineer Construction & Maintenence, New Jersey Department of Transportation, 1035 Parkway Ave., Trenton, NJ 08625.

Fertilizer Institute Trade Fair, H. Roe Vartle Hall, Kansas City, MO, **Aug. 5-6.** Contact Barbara Schoen, 1015 18th St., NW., Washington, DC 20036, 202/466-2700.

SPRAY HOSE WON'T FIGHT BACK WHEN IT'S ON A HANNAY REEL

Are you still manhandling clumsy spray hose? Hauling, dragging...stopping to fight kinks and tangles? Get Hannay Reels and put spray hose in its place.

- Pay out smooth and easy. Wind up straight and fast.
- Greater range. Better control.
- Neat, convenient hose storage.
- Less wear and tear on you and the hose.

Specify Hannay Reels for all your spraying operations. Write for your FREE Specification Catalog today.

HANNAY REELS

CLIFFORD B. HANNAY & SON, INC., WESTERLO, NY 12193

Write **132** on free information card

ADVERTISERS

Allied Chemical Corp. 28
BASF Wyandotte....89
Barebo Inc. 94
Big Trees Today Inc. 86
Boots Hercules 36,37
Brouwer Turf Equip. Ltd. 85
Chevron Chemical Co. 76
Ciba Geigy Corp. 90,91
Cushman/OMC-Lincoln 6,7,71
Diamond Shamrock 54,55
Ditch Witch, Div. Charles Machine Works 49
Dow Chemical USA 17,82,83
Dynamic Industries Inc. 25
Elanco Prod. Co., Eli Lilly 73
FMC, Bolens 63
FMC Corp. 15
Finn Equipment Co. 77
Foxcroft Dev. Corp. 70
Grasshopper 72
Green Machine 10,11
Hahn Inc. 66,67
Hoffco Inc. 88
Hoffman LaRoche 39
Howard S. Crane Inc. 70
International Spike 94
JI Case 12
Jacobsen Mfg. Co. 18,19
Lakeshore Equip. & Supply 45
Lofts Pedigreed Seed 100
Master Mfg. Co. 86
Mathews Co. 65
Merck & Co., Inc. 79
Monsanto 53
Mott Corp. 92
Oregon Fine Fescue 84
PBI Gordon 68,69
Pickseed 62
Princeton Mfg. Co. 60
Rain Bird 2,3
Rhone Poulenc 98,99
Ryan/OMC-Lincoln 40
SPIC 58
Safety Test 57
Samson Ocean Systems 87
Seaman Co. 38
Solarcell Corp. 64
Standard Golf 81
Stihl Inc. 61
Tee-2-Green Corp. 4
Telsco Mfg. Co. 8,9
Toro Co. 74,75
Trac'n Combo 66
Tuflex Mfg. Co. 78
Turf Seed 33
Union Carbide Corp. 26,27
U.S. Gypsum 31
Vandermolen 40
Vermeer 42
Wisconsin Marine 38
Yanmar Diesel Engine Co. 23

Advertising Sales Offices

ATLANTA
Dick Gore,
National Sales Manager
3091 Maple Drive
Maple Center One Building
Atlanta, GA 30305
404+233-1817.

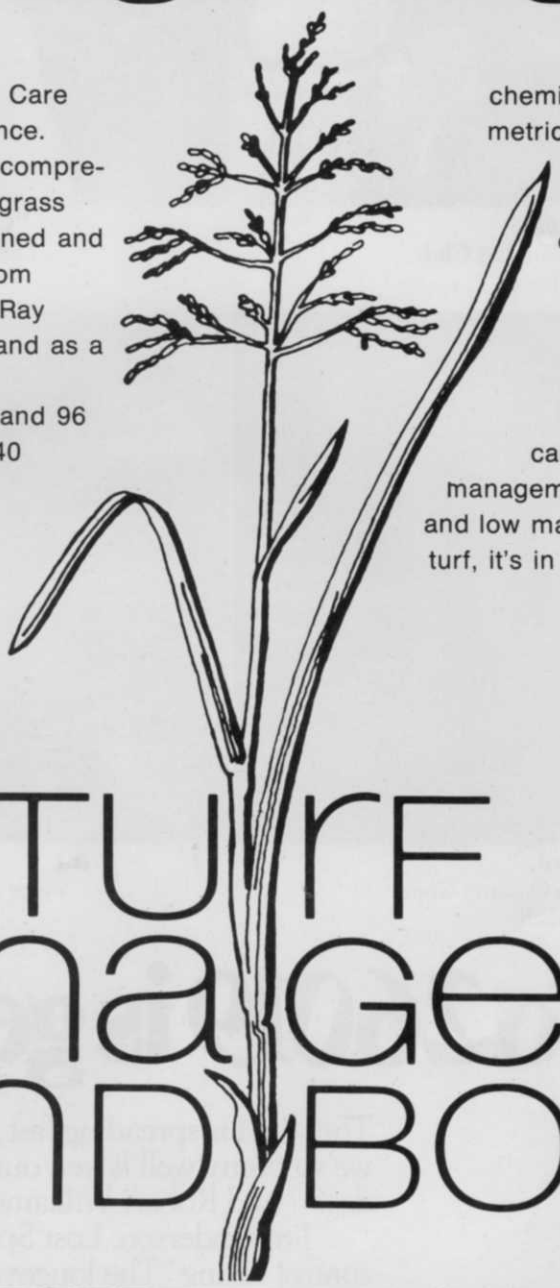
SEATTLE
Robert A. Mierow
1333 N.W. Norcross
Seattle, WA 98177
206+363-2864

NEW YORK
Brian Harris
757 Third Ave.,
New York, NY 10017
212+421-1350

CHICAGO
Jeff Dreazen
333 N. Michigan Ave.
Chicago, IL 60611.
312+236-9425

Materials and orders for display advertising or classified advertising should be sent to Chris Simco, Harvest Publishing Co., 9800 Detroit Ave., Cleveland, OH 44102. Deadlines are generally the first week of the month prior to publication.

Finally, An Aid For Teaching Turfgrass



Superintendents, Contractors, Lawn Care Managers, New, On-the-Job Reference. The Turf Managers' Handbook is a comprehensive, organized approach to turfgrass science and care. It has been designed and written by leading turf specialists from Purdue, Dr. William Daniel and Dr. Ray Freeborg, for on-the-job reference and as a text for students.

The book contains 150 illustrations and 96 color photographs. Data includes 240 tables and forms. Included are specifications for rootzones, employment, calculations for chemical applications, and extensive metric-imperial conversion. Business and technical aspects of turfgrass management are covered in this 424-page book. Planning, purchasing, hiring, construction, and plant selection are put together for easy on-the-job reference. Markets covered include lawn care, sod production, golf course management, cemeteries, athletic fields, and low maintenance areas. If it concerns turf, it's in the Turf Managers' Handbook.

TURF managers' HANDBOOK

Ordering Information

Please send _____ copies of the hardback ($18.95 ea.)
_____ copies of the paperback ($14.95 ea.)

A shipping charge of $1.25 per book must be added.

A check or money order for _____ is enclosed.

Please charge to my VISA or MASTER CHARGE (circle one)
account no. _____ , expiration date _____ .

I understand that delivery may take six to eight weeks.
Quantity and bookstore rates available upon request.

Signature _____

Name (Print) _____

Address _____

City _____ State _____ Zip _____

Send to:
Books Department
Business Publications Division
Harvest Publishing Company
9800 Detroit Ave.
Cleveland, OH 44102

HARVEST

"Saved money."
Jim Anderson, Lost Spur Country Club
St. Paul, Minn.

"Controlled brown patch."
Larry Bunn, Blue Hill Country Club
Canton, Mass.

"3 week control."
Chris Myers, Bloomfield Hills Country Club
Bloomfield Hills, Mich.

"Best I've ever used."
Vince Spano, Hamlet Golf & Tennis Club
Delray Beach, Fla.

Chipco® 26019 is getting the w

The word is spreading fast and it's all good. "With Chipco 2601 we've pretty well licked our disease problems and it lasts up to days!" said Robert Williams at Maidstone Club.

Jim Anderson, Lost Spur C.C., emphasized 21 day residual control saying "The longer time between spraying has saved money and labor to keep us within budget." And Firestone's Jir Loke said, "with 200 to 300 players per day, the long spray interv adds extra convenience."

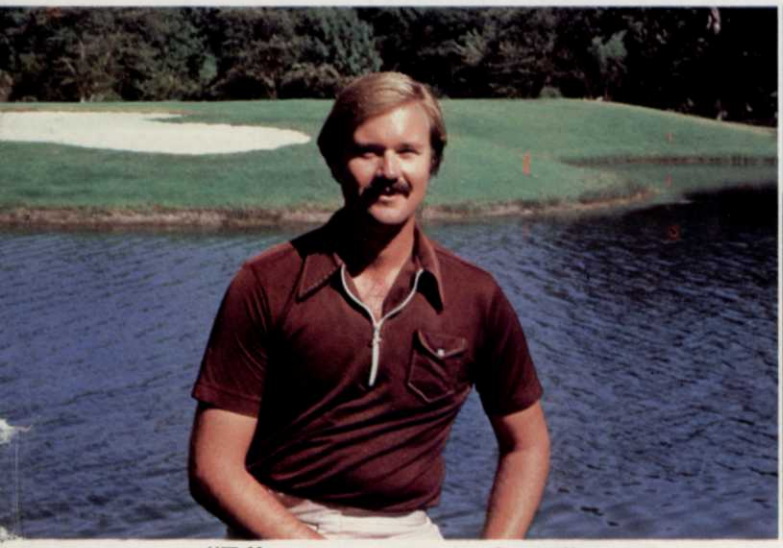
They're all impressed with just how effective Chipco 26019 against the toughest disease problems like dollar spot, (includin benomyl resistant dollar spot) brown patch, Helminthosporium (leafspot, and melting out) and fusarium patch in the Northwes

Bent Tree C.C. Superintendent Warren Stringer said, "Leaf spot was epidemic in proportions here last Spring. Weeks of rain left our usual fungicides ineffective. Chipco 26019 turned the tide

Please read label carefully, and use only as directed.

"Extra convenience."
Jim Loke, Firestone Country Club
Akron, Ohio

"What I'll use in the future."
John Monson, Broadmoor Golf Club
Seattle, Washington



"Effective against leafspot."
Warren Stringer, Bent Tree Country Club
Dallas, Texas

"Eliminated dollar spot."
Robert Williams, Maidstone Club
East Hampton, N.Y.

ord from the guys that count.

Larry Bunn noted, "we controlled dollar spot and brown patch with two applications." And Chris Myers of Bloomfield Hills C.C. said that Chipco 26019 controlled dollar spot "longer than any other fungicide he used last year."

This season, ask your Chipco distributor or Rhône-Poulenc representative about Chipco 26019...the turf fungicide that outperforms anything else you can use, with about half the number of sprays. Who says so? *You, the turf care professional.* And as far as we're concerned, that's the last word.

Rhône-Poulenc Chemical Co., Agrochemical Division, Monmouth Junction, NJ 08852

RHÔNE-POULENC CHEMICAL COMPANY
AGROCHEMICAL DIVISION

Write **166** on free information card

The shot heard 'round the Turf world:

Yorktown II

Turf-Type Perennial Ryegrass

Four-Year Performance of commercially available varieties of perennial ryegrass at Rutgers University, North Brunswick, New Jersey proves Yorktown II is so good it's Revolutionary!

Cultivar	1974-1977 Average*
1. Yorktown II	7.3
2. Blazer	6.7
3. Fiesta	6.5
4. Diplomat	6.3
5. Dasher	6.2
6. Omega	6.1
7. Citation	6.1
8. Yorktown	6.0
9. Derby	5.8
10. Birdie	5.6
11. Pennfine	5.3
12. Manhattan	5.0
13. NK-200	3.8
14. Eton	3.8
15. Pelo	3.1
16. NK-100	2.7
17. Game	2.5
18. Linn	2.2

*Turf performance score: 9 = Highest Possible Score.

Four years of testing, during some of the most severe weather conditions in recent years, proved Yorktown II number one in overall turf quality . . . based on criteria including appearance, heat and cold tolerance, density, mowing quality and disease resistance. No wonder Yorktown II is so good . . .

It's Revolutionary

From the producers of Baron Kentucky Bluegrass.

Available through all Lofts divisions and leading seed houses.

Lofts Pedigreed Seed, Inc.
Bound Brook, N.J. 08805 / (201) 356-8700

Write 107 on free information card